**Minneapolis Options Report – December 12ᵗʰ**

UPDATES: We have extended our bank and insurance company data back to 2006.[1] Our insurance company universe has expanded to include Aflac, Allstate, Ameriprise, Chubb, Principal, and Progressive.

Banks & Insurance Companies
Banks and insurance company stocks sold off over the past two weeks. The broader S&P 500 market index fell -1.76% while the average CCAR bank fell -1.78%. The average price of the ten insurance companies we follow underperformed the S&P 500 falling -2.35%. Options trading was very light in both industries. RNPD standard deviations generally rose, consistent with the declines in share prices.
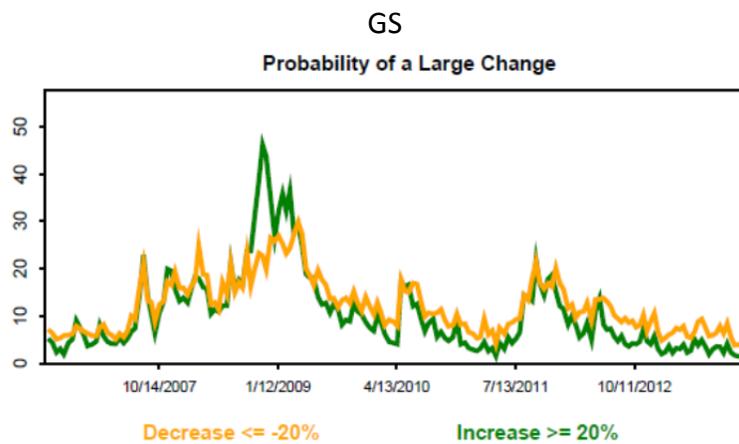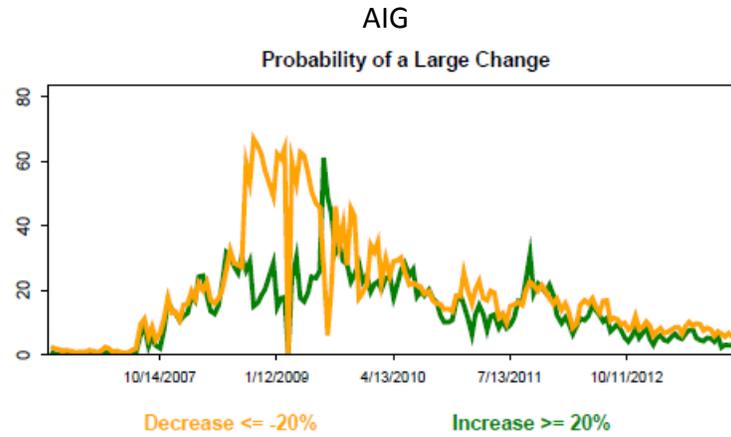
Additional Notes:
- Bank RNPD skews continue to become less negative. They are at their highest level since 2010.

Median RNPD Skew
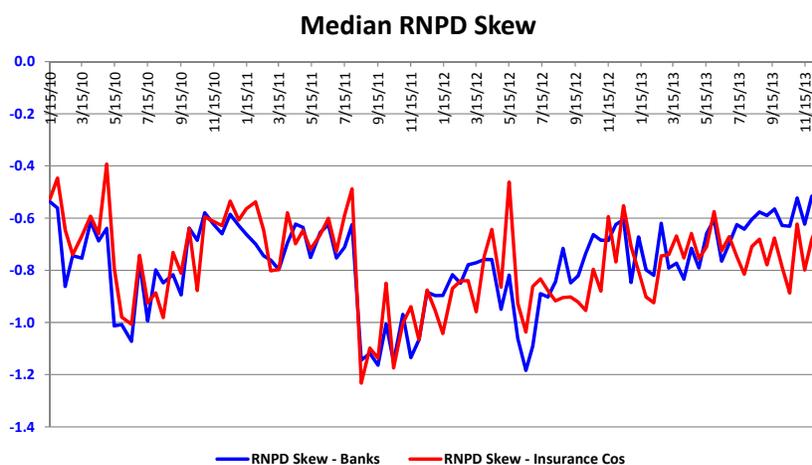
- We examined tail probability behavior during the crisis for individual firms. We note that, while probabilities of large change for price moves in both directions increased dramatically, for some firms there was a directional bias. Market participants placed higher probability of downside movement on shares of AIG, BAC, C, HIG, and STI. On the other hand, probabilities of large upside moves were higher for GS, MS, RF, and WFC.

---

[1] Some historical data for particular companies is still missing as it needs additional cleaning. We will attend to that in the coming weeks.

AIG

Probability of a Large Change

Decrease <= -20%   Increase >= 20%

GS

Probability of a Large Change

Decrease <= -20%   Increase >= 20%

Other Commodity Markets

Trading levels in options on the other commodity markets we follow were light again last week. Generally, spot prices were lower. Changes in tail risks as measured by RNPD standard deviations were mixed.

Additional notes:

- RNPD profiles derived from options on the S&P 500 Index for 6 and 12-month expiries have moved very little in the past six months. Large changes to the downside relative to the upside continue to be more prevalent at the 12-month expiry. (*See S&P 500 reports*)

- Tail risks (large change probabilities and RNPD standard deviations) continue their declining trend for the two oil markets we follow. (*See Brent and WTI reports*)

- RNPD standard deviations from RNPDs derived from options on Gold and Silver futures rose relative to two weeks ago. We noted some trading in options on Gold futures at strikes well above the current spot price. (*See Gold and Silver reports*)

- RNPD standard deviations derived from options on exchange rate futures declined in all three markets we follow. (*See Dollar-Euro, Dollar-Pound, and Dollar-Yen reports*)

- RNPD skews derived from options on corn and soybean futures remain negative. (*See Corn and Soybean reports*)
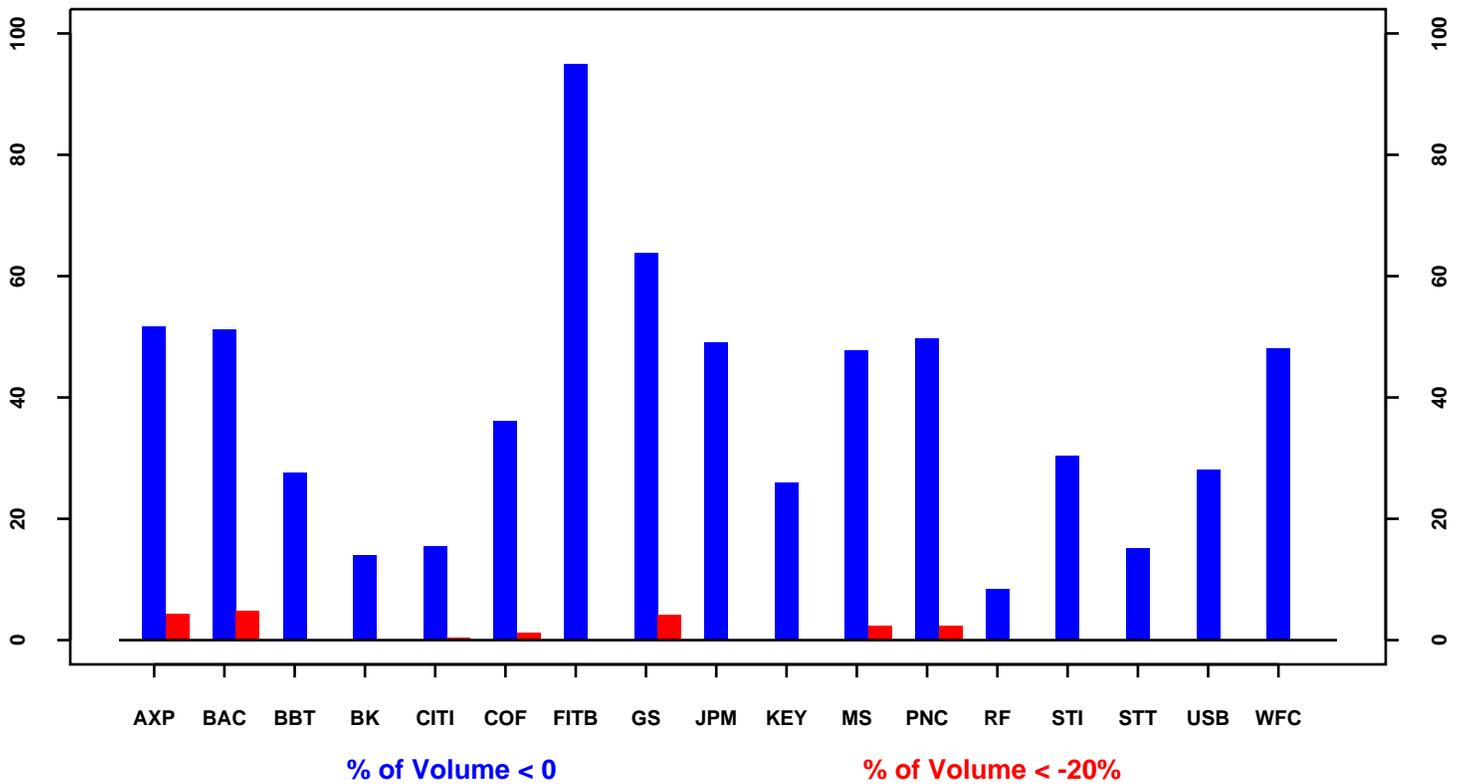
RNPD Skews - Grains

Source: Minneapolis Calculations, Bloomberg

corn   soybeans   wheat
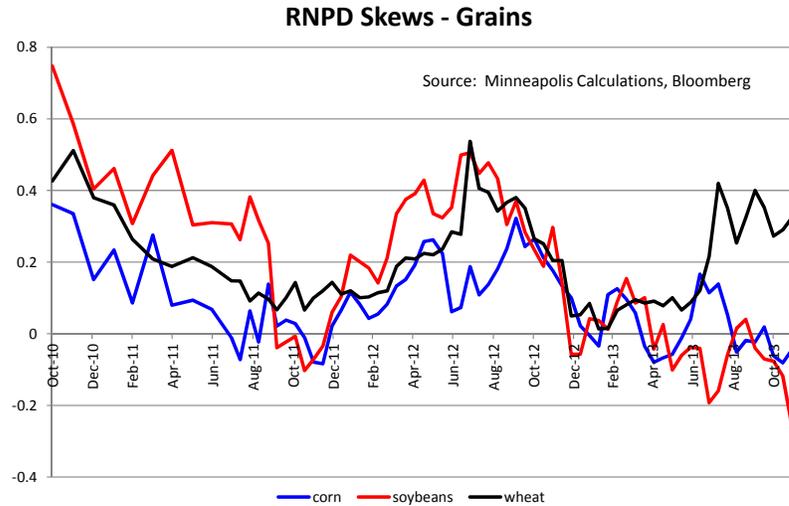
- The RNPD standard deviation derived from options on the DJ Real Estate ETF clicked higher last week. (*See Real Estate report*)
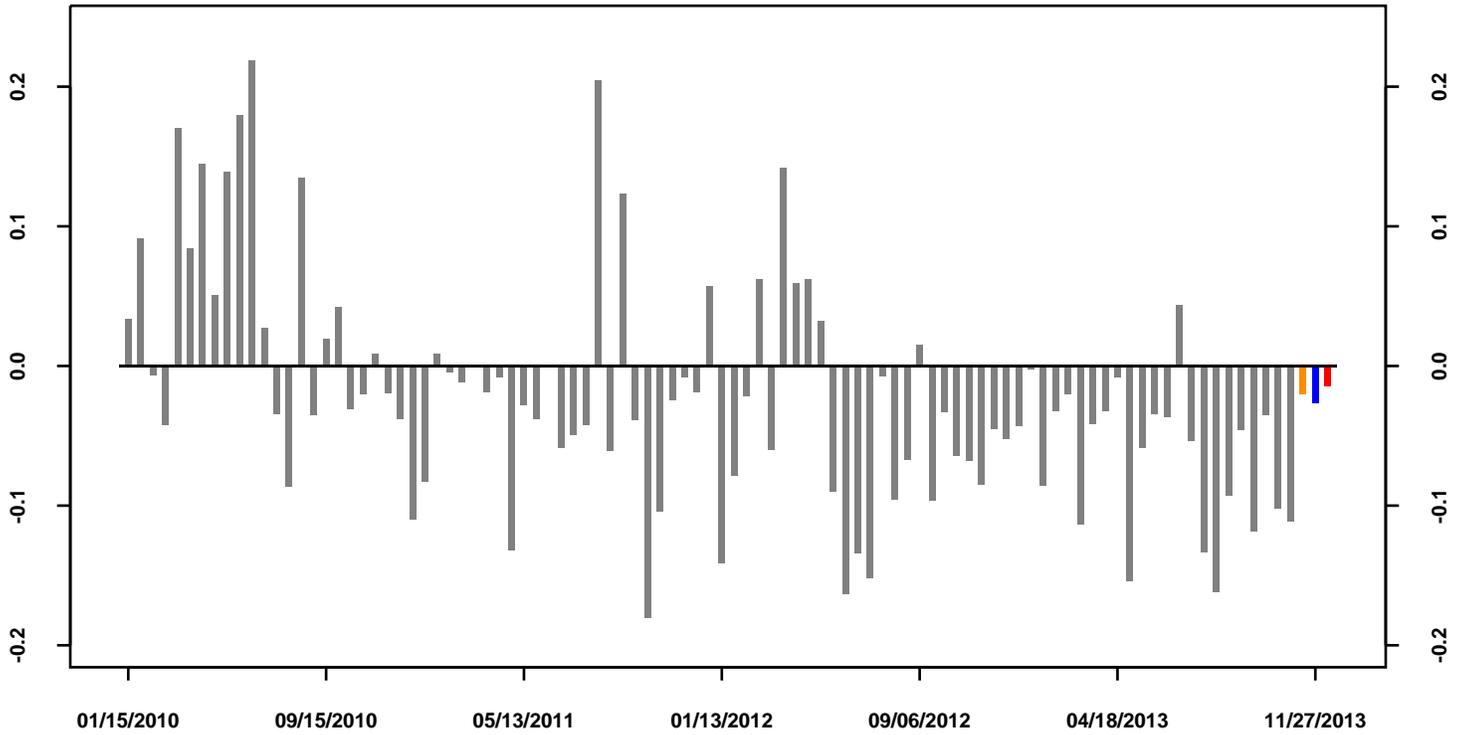
Aggregate Volumes for Options on CCAR Banks

% of Volume < 0 **% of Volume < -20%**

Volumes for Options on CCAR Banks
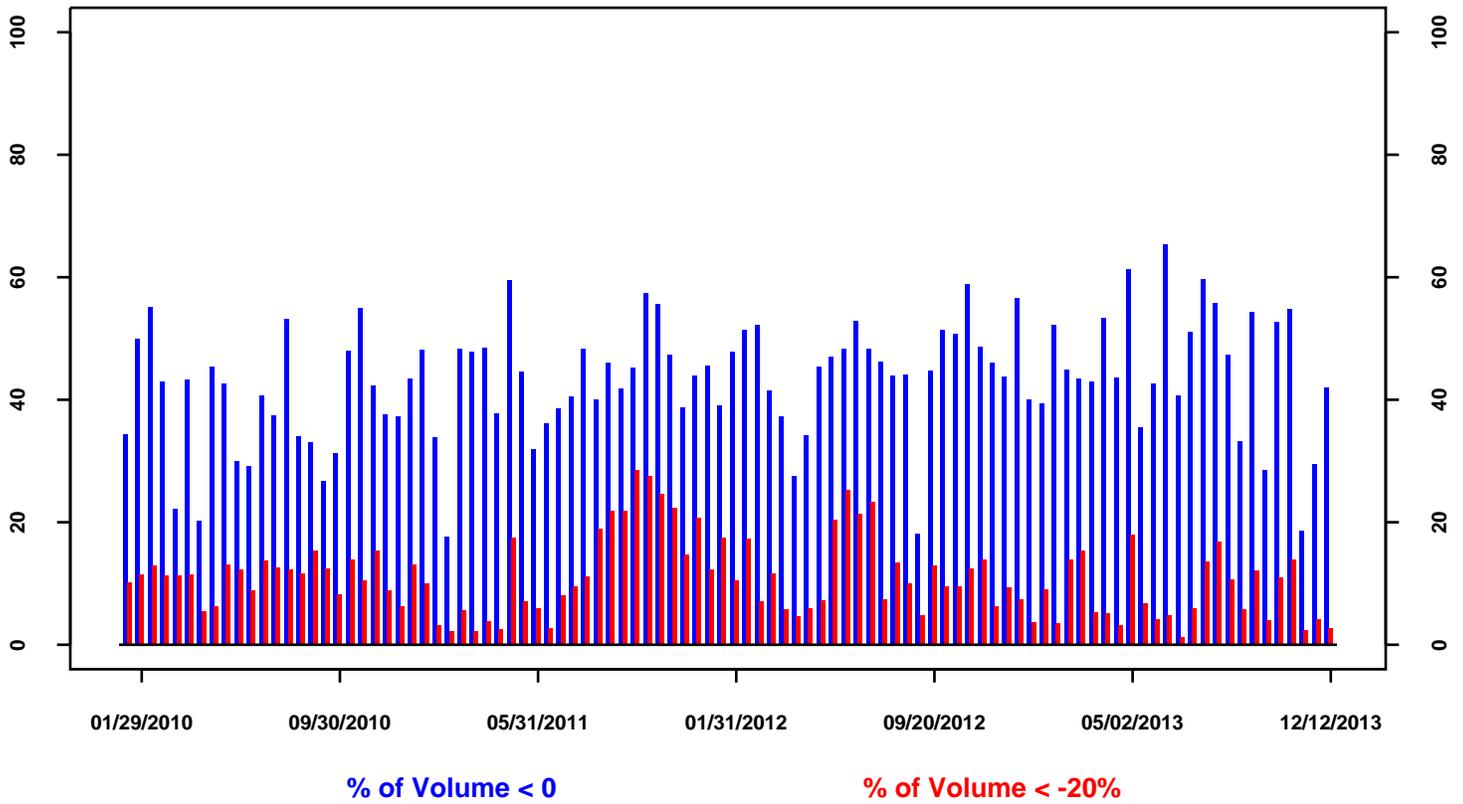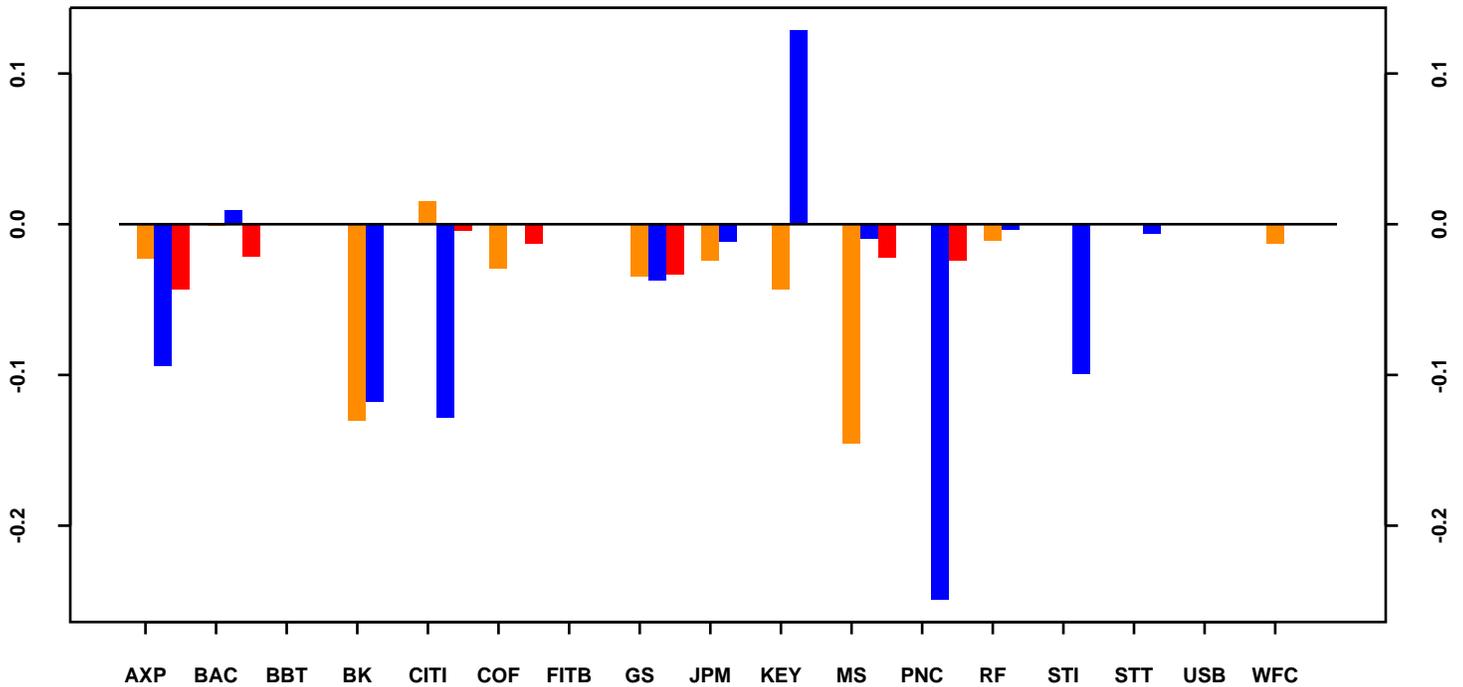

% of Volume < 0 **% of Volume < -20%**

Aggregate Volume Skew--CCAR Banks

(% of volume traded in deep out-of-the-money calls LESS % of volume traded in deep out-of-the-money puts)

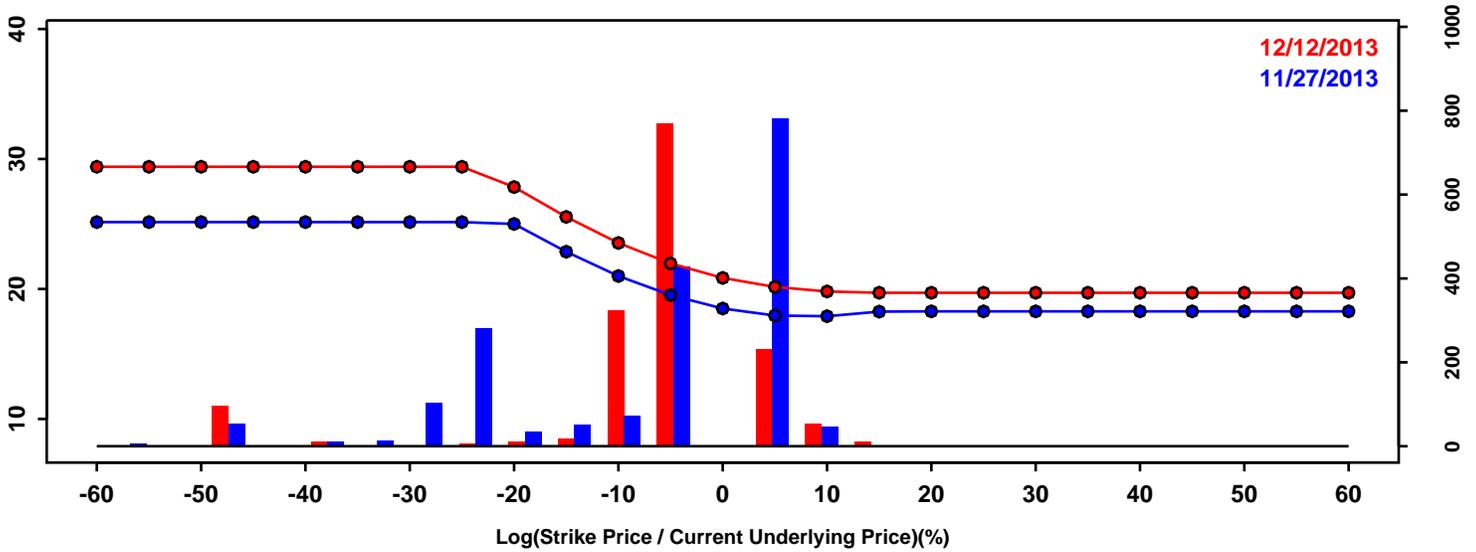## CCAR Bank Volume Skew -- Last Three Periods

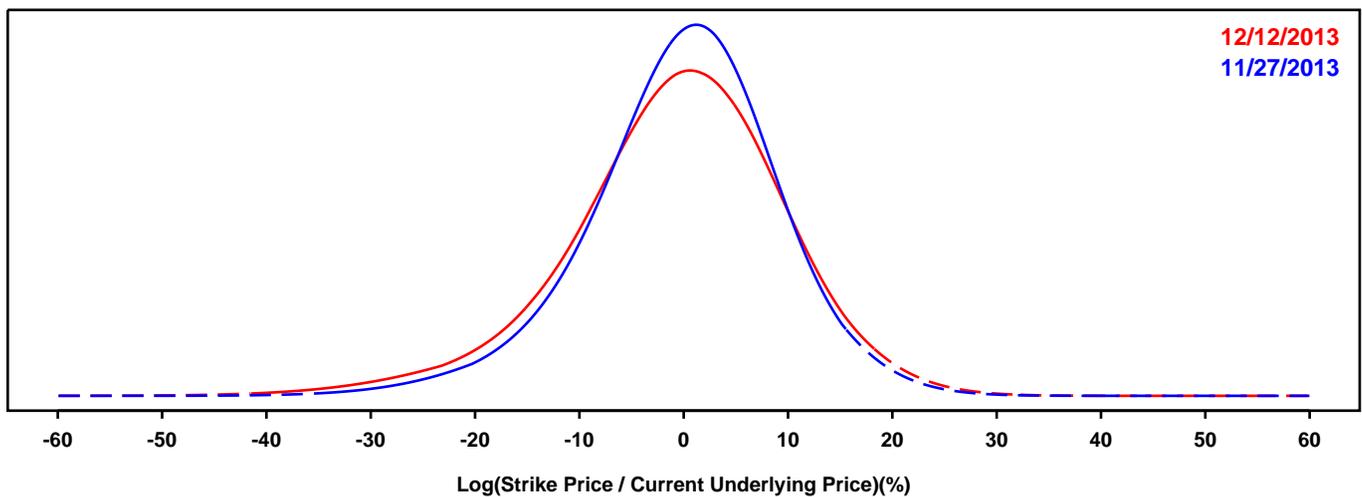**11/14/2013**   **11/27/2013**   **12/12/2013**

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- AMERICAN EXPRESS

*Log returns are based on the risk neutral density function of the underlying asset
derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

Risk Neutral PDF of the Log Return Distribution

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**

Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-11.73%	-14.02%	-2.29%
50th Pct	0.42%	-0.07%	-0.49%
90th Pct	11.00%	11.82%	0.82%
Mean	-0.03%	-0.73%	-0.70%
Std Dev	9.26%	10.57%	1.31%
Skew	-0.39	-0.50	-0.11
Kurtosis	0.83	0.96	0.13

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- BANK OF AMERICA

*Log returns are based on the risk neutral density function of the underlying asset
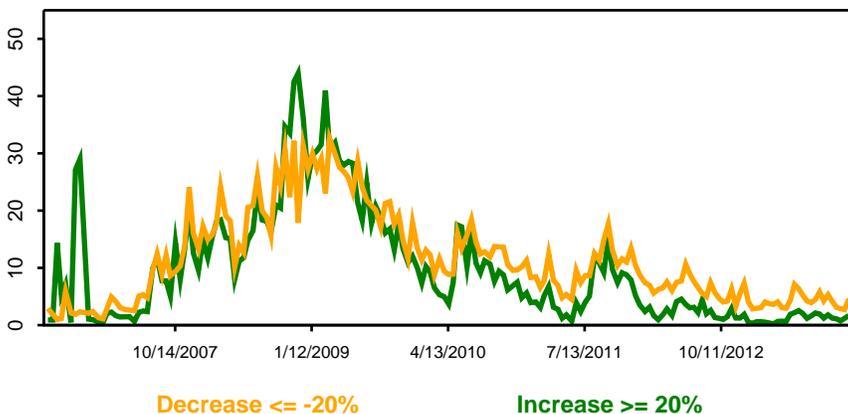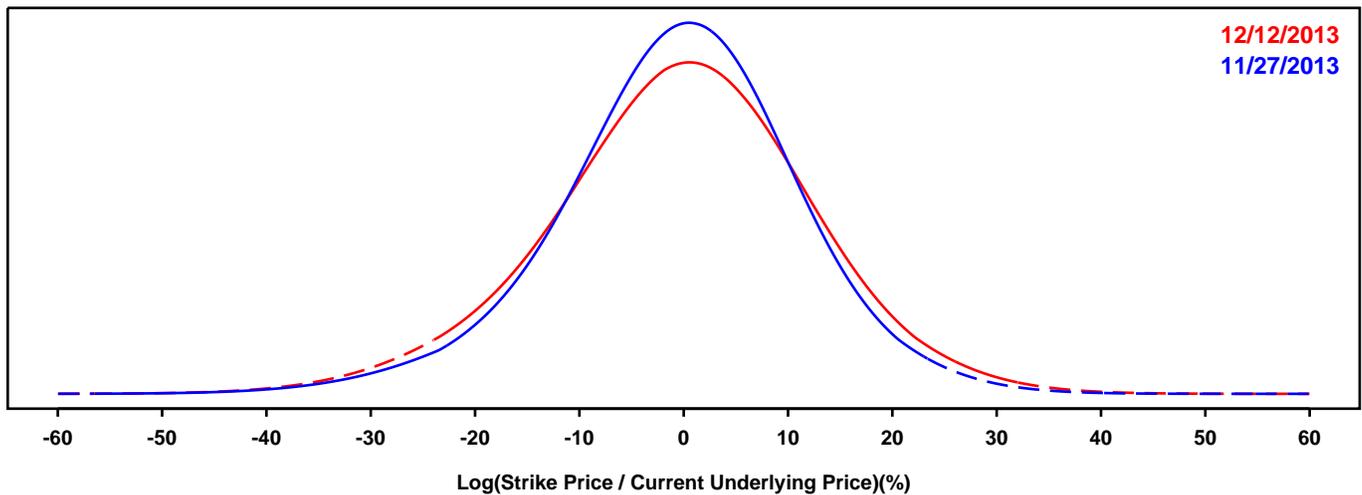derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   Increase >= 20%
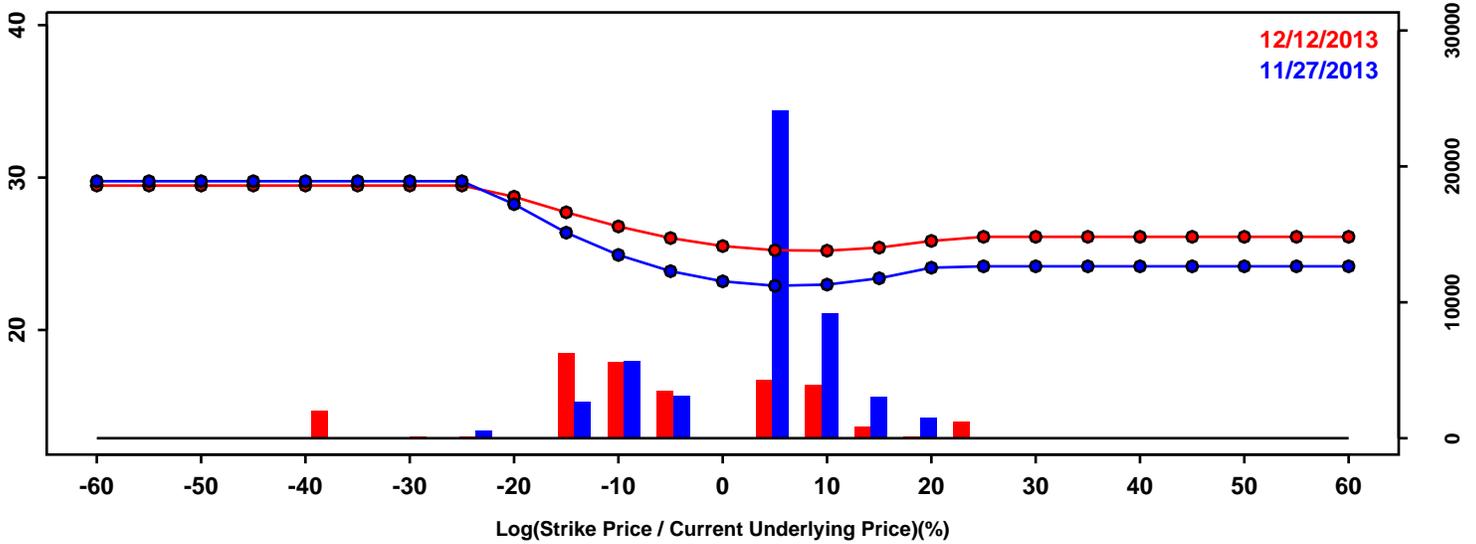
Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-15.15%	-16.75%	-1.60%
50th Pct	-0.09%	0.00%	0.09%
90th Pct	13.57%	15.31%	1.74%
Mean	-0.51%	-0.36%	0.15%
Std Dev	11.66%	12.77%	1.11%
Skew	-0.27	-0.19	0.08
Kurtosis	0.68	0.38	-0.29

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- BB&T

*Log returns are based on the risk neutral density function of the underlying asset
derived from options that expire in approximately 3 months.*

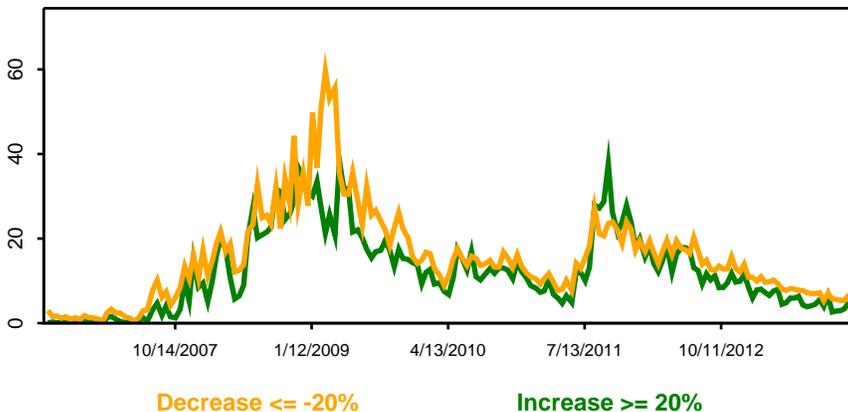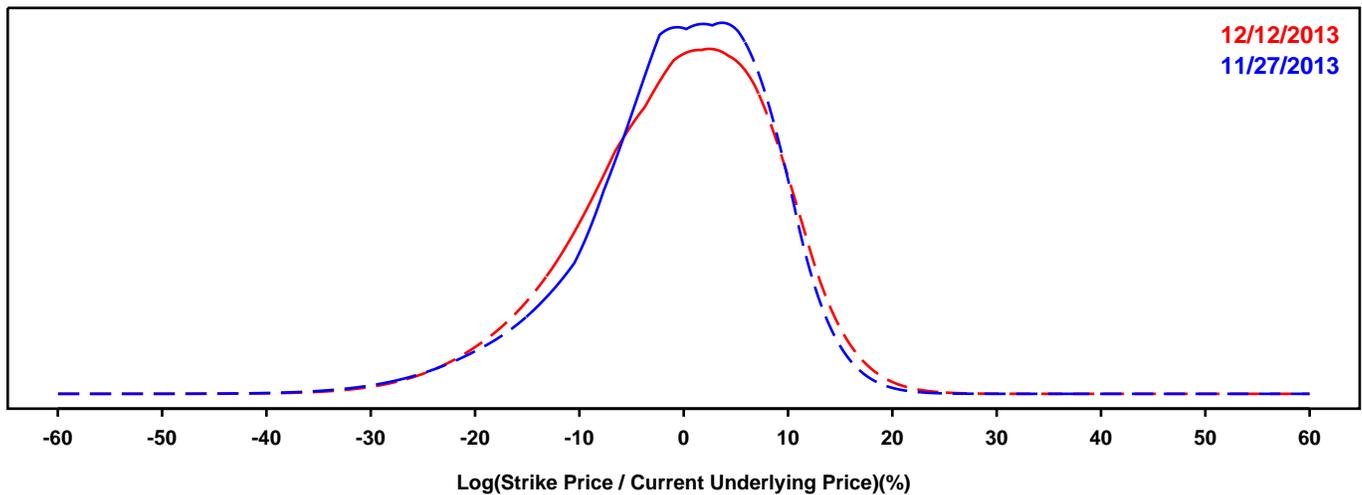### Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   Increase >= 20%
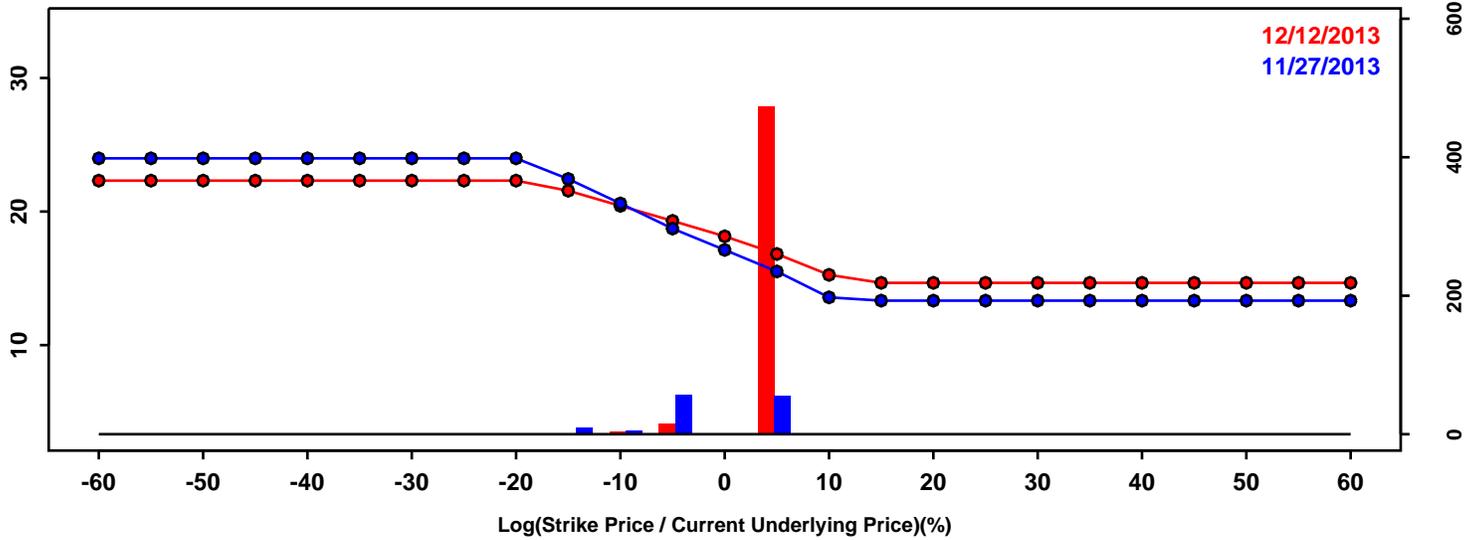
Statistics of the Log Return Distributions

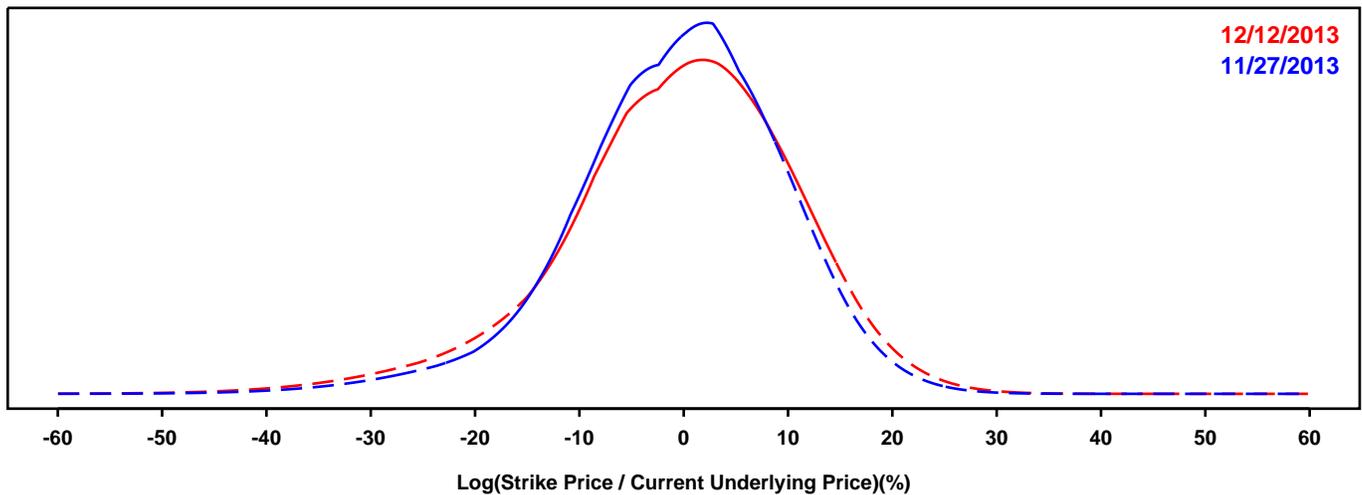|	11/27/2013	12/12/2013	Change
10th Pct	-12.43%	-13.08%	-0.66%
50th Pct	0.32%	0.17%	-0.15%
90th Pct	9.63%	10.36%	0.74%
Mean	-0.61%	-0.67%	-0.06%
Std Dev	8.89%	9.26%	0.37%
Skew	-0.74%	-0.51	0.23
Kurtosis	0.89	0.29	-0.60

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- BANK OF NEW YORK MELLON

Log returns are based on the risk neutral density function of the underlying asset
derived from options that expire in approximately 3 months.

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

10/14/2007   1/12/2009   4/13/2010   7/13/2011   10/11/2012

Decrease <= -20%   **Increase >= 20%**
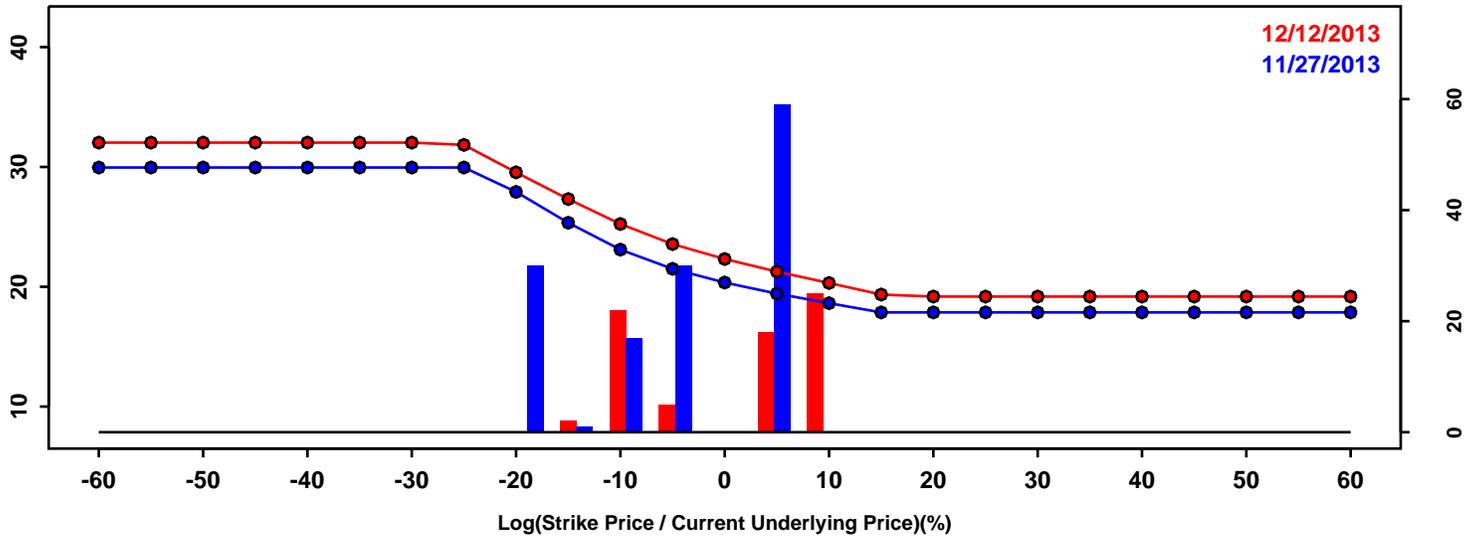
Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-13.21%	-14.85%	-1.65%
50th Pct	0.08%	0.30%	0.22%
90th Pct	11.70%	12.92%	1.22%
Mean	-0.57%	-0.55%	0.02%
Std Dev	10.25%	11.37%	1.12%
Skew	-0.55%	-0.61	-0.06
Kurtosis	1.04	1.00	-0.04

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CITIGROUP

*Log returns are based on the risk neutral density function of the underlying asset
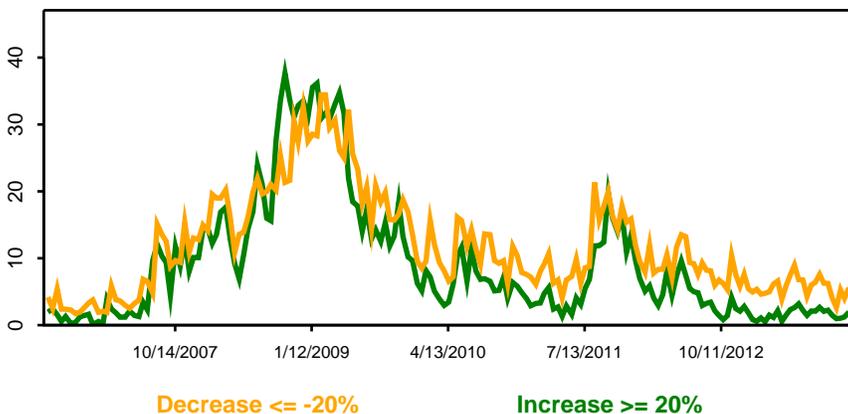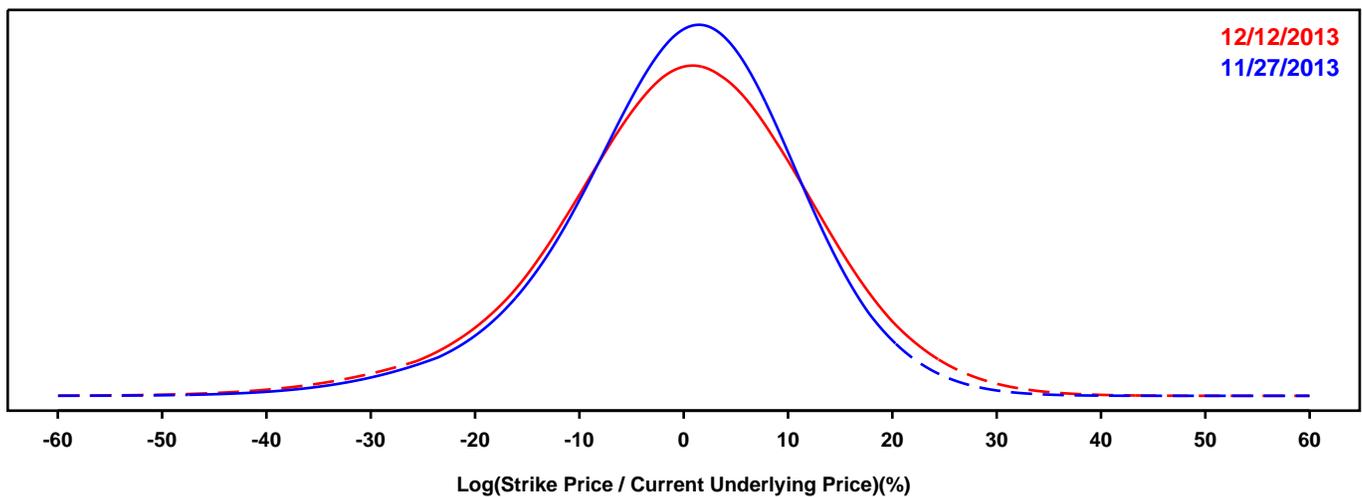derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
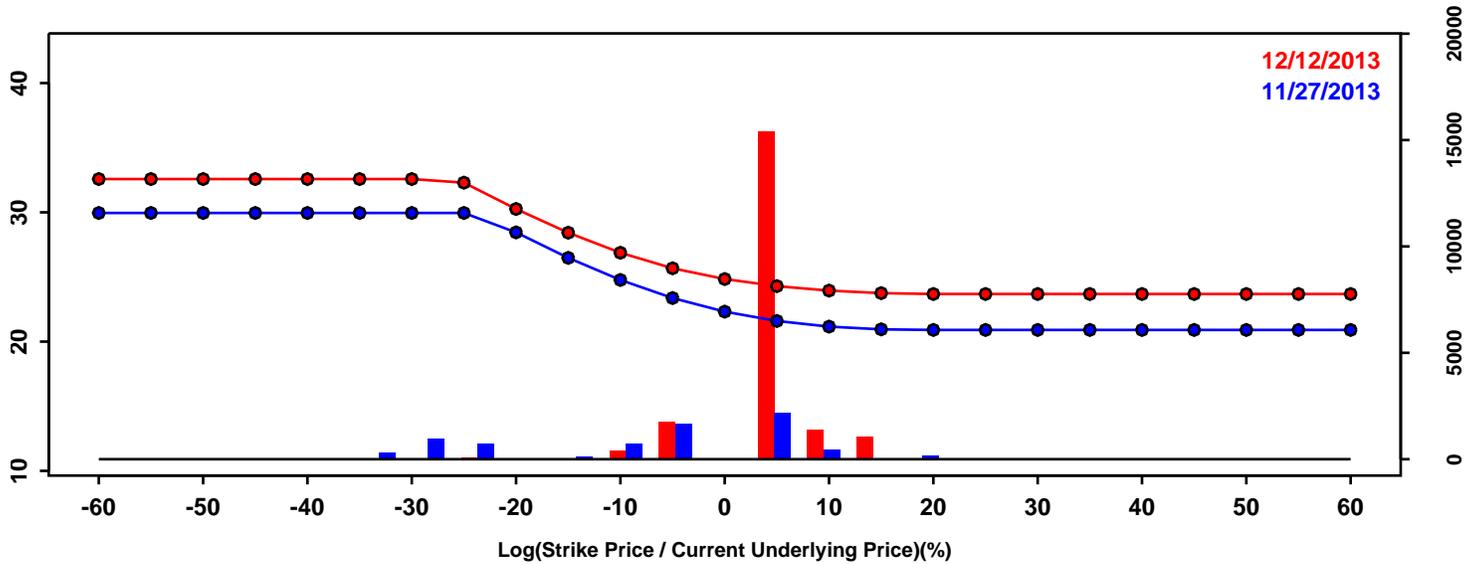
Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-14.46%	-15.70%	-1.24%
50th Pct	0.51%	0.46%	-0.05%
90th Pct	13.24%	15.04%	1.80%
Mean	-0.18%	-0.07%	0.11%
Std Dev	11.22%	12.41%	1.19%
Skew	-0.44	-0.35	0.09
Kurtosis	0.75	0.66	-0.09

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CAPITAL ONE

*Log returns are based on the risk neutral density function of the underlying asset
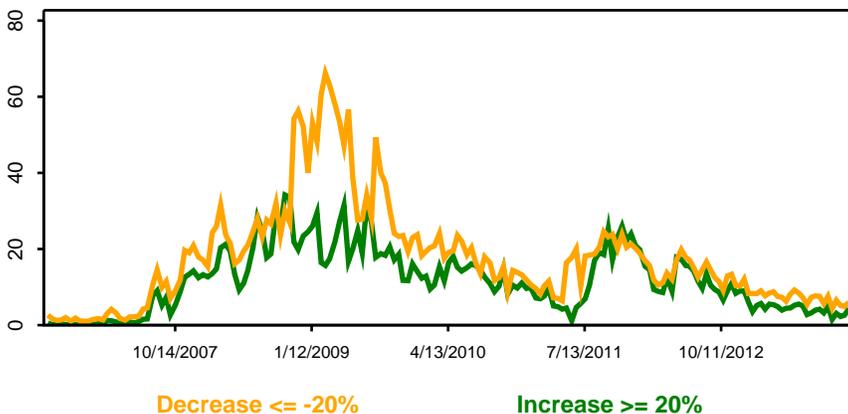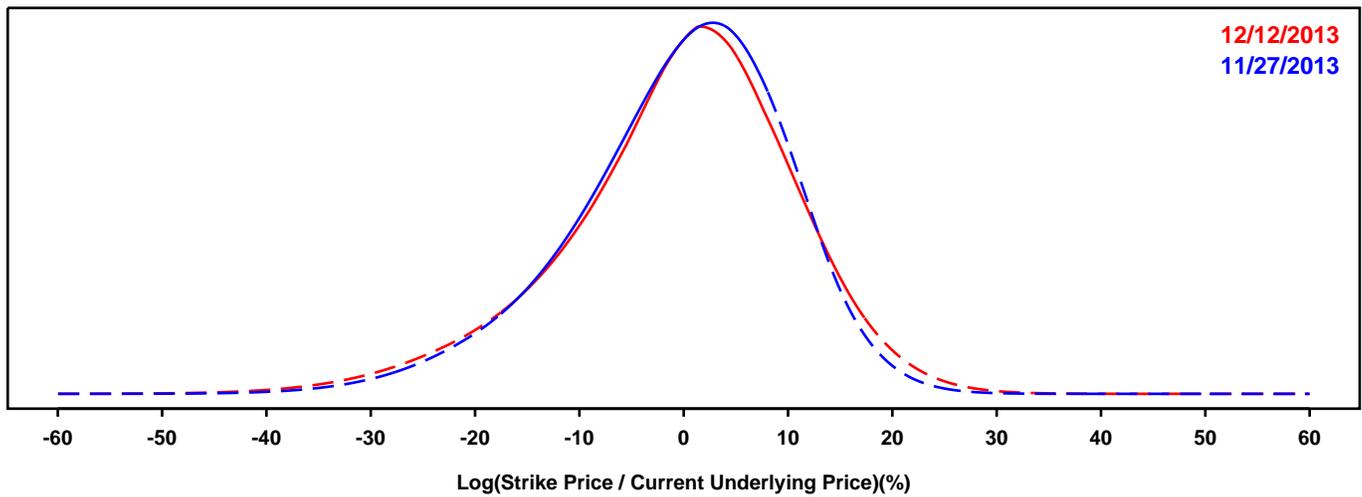derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
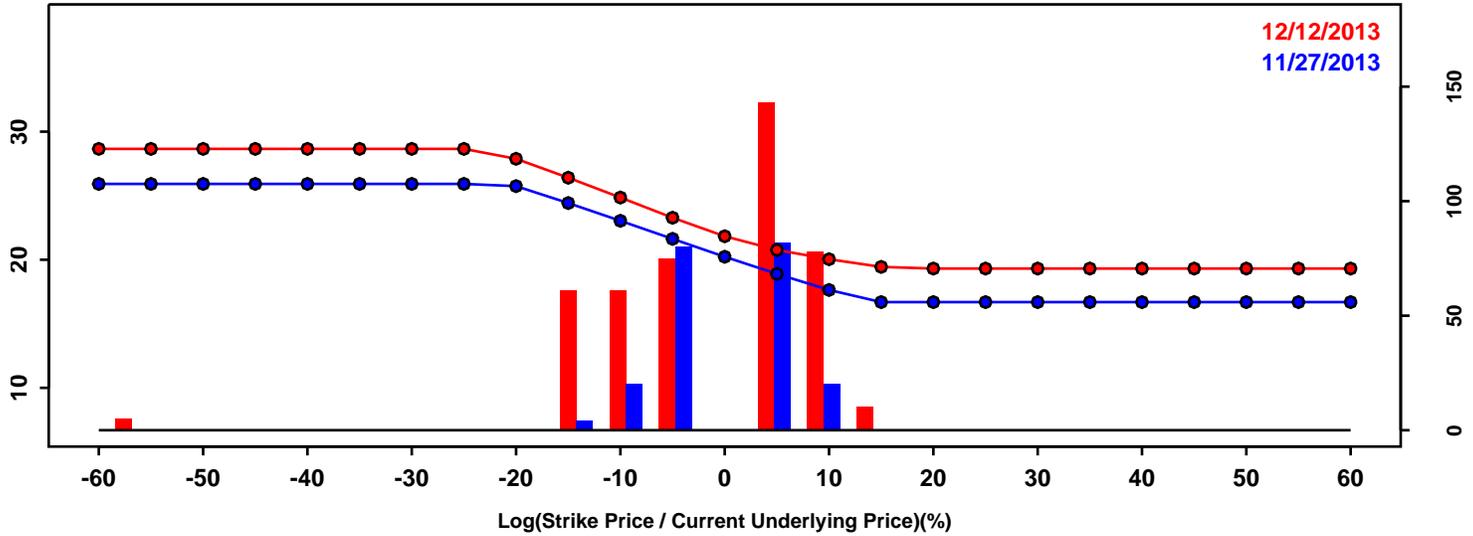
Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-14.41%	-15.40%	-0.99%
50th Pct	0.63%	0.59%	-0.04%
90th Pct	11.63%	12.62%	0.99%
Mean	-0.50%	-0.51%	-0.01%
Std Dev	10.37%	11.19%	0.83%
Skew	-0.58	-0.57	0.02
Kurtosis	0.52	0.70	0.19

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- FIFTH THIRD

*Log returns are based on the risk neutral density function of the underlying asset
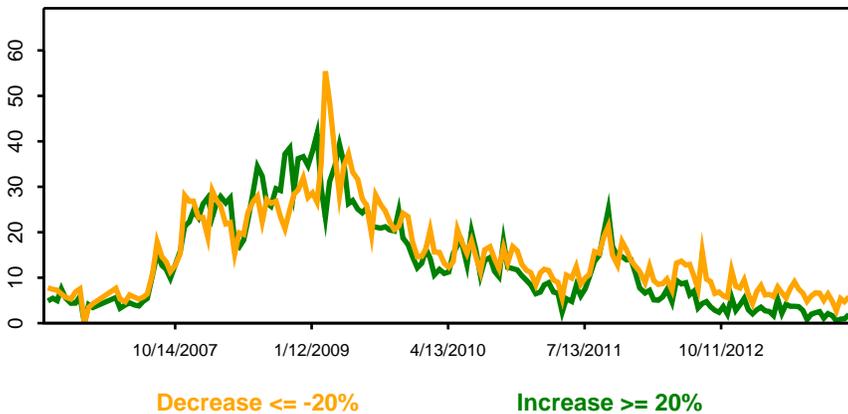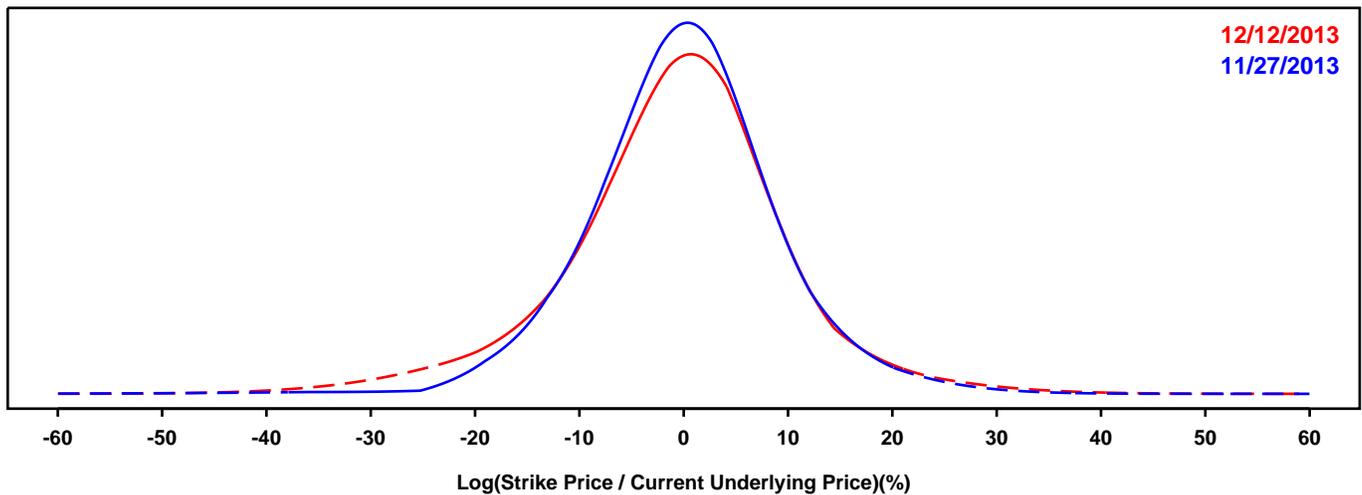derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
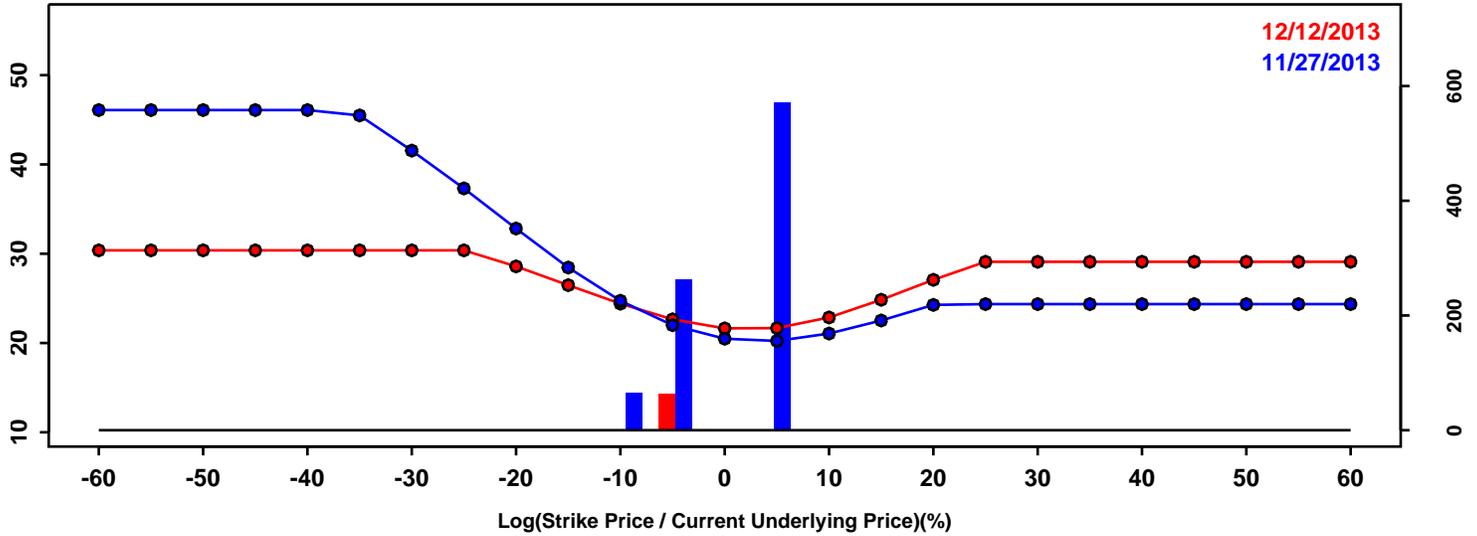
Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-11.02%	-13.85%	-2.83%
50th Pct	0.09%	-0.15%	-0.24%
90th Pct	10.95%	11.29%	0.34%
Mean	0.05%	-0.72%	-0.76%
Std Dev	9.26%	10.84%	1.57%
Skew	-0.25	-0.30	-0.05
Kurtosis	2.73	1.66	-1.07

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- GOLDMAN SACHS

*Log returns are based on the risk neutral density function of the underlying asset
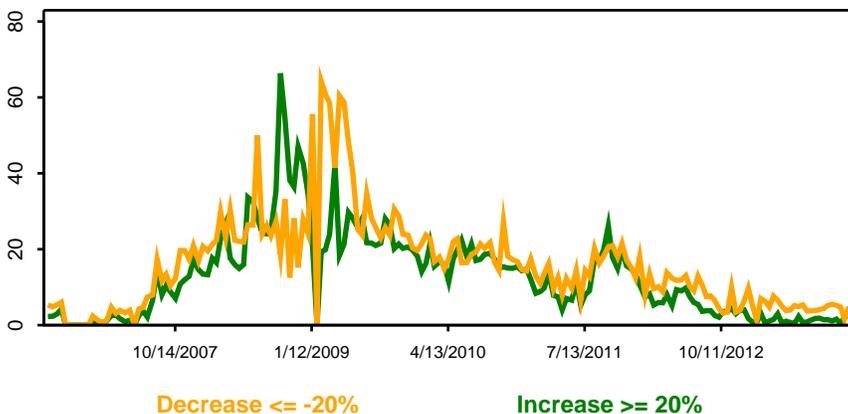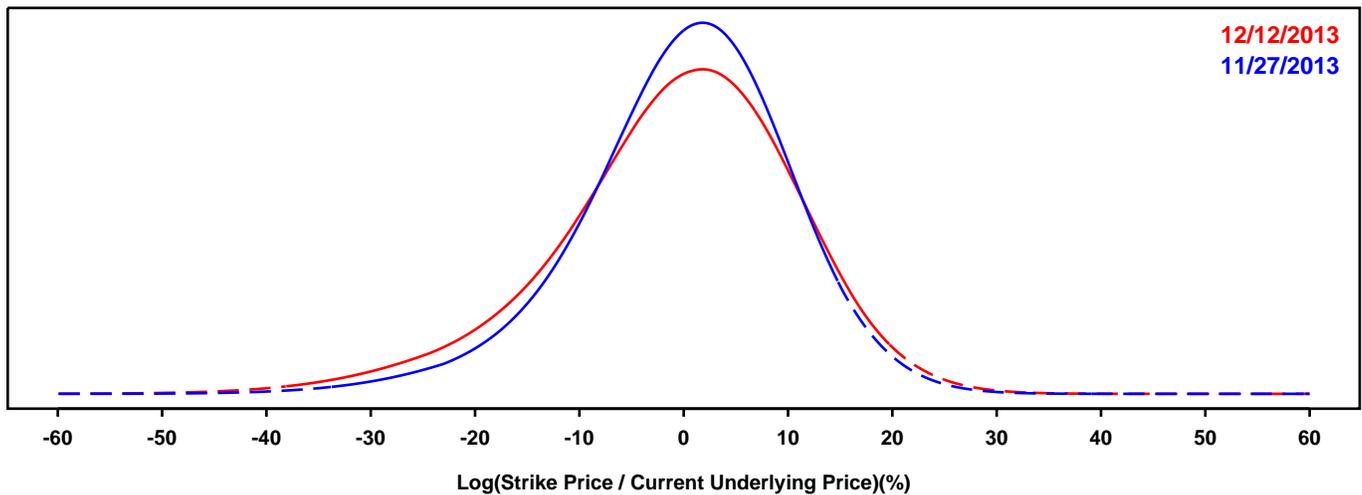derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
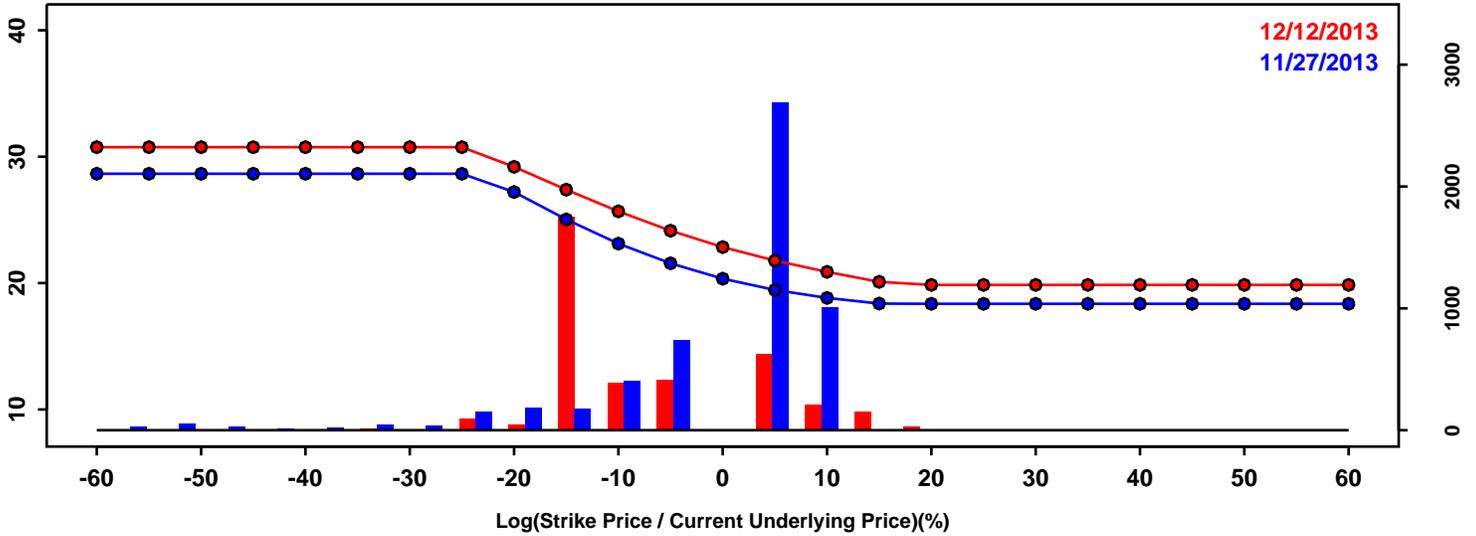
Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-12.97%	-16.09%	-3.12%
50th Pct	0.77%	0.19%	-0.58%
90th Pct	12.20%	12.96%	0.76%
Mean	0.06%	-0.84%	-0.89%
Std Dev	10.22%	11.71%	1.49%
Skew	-0.52%	-0.57	-0.05
Kurtosis	0.87	0.74	-0.13

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- JP MORGAN

Log returns are based on the risk neutral density function of the underlying asset
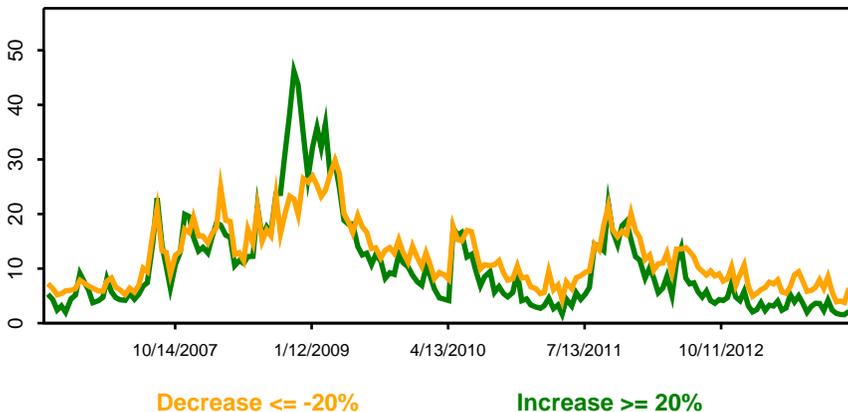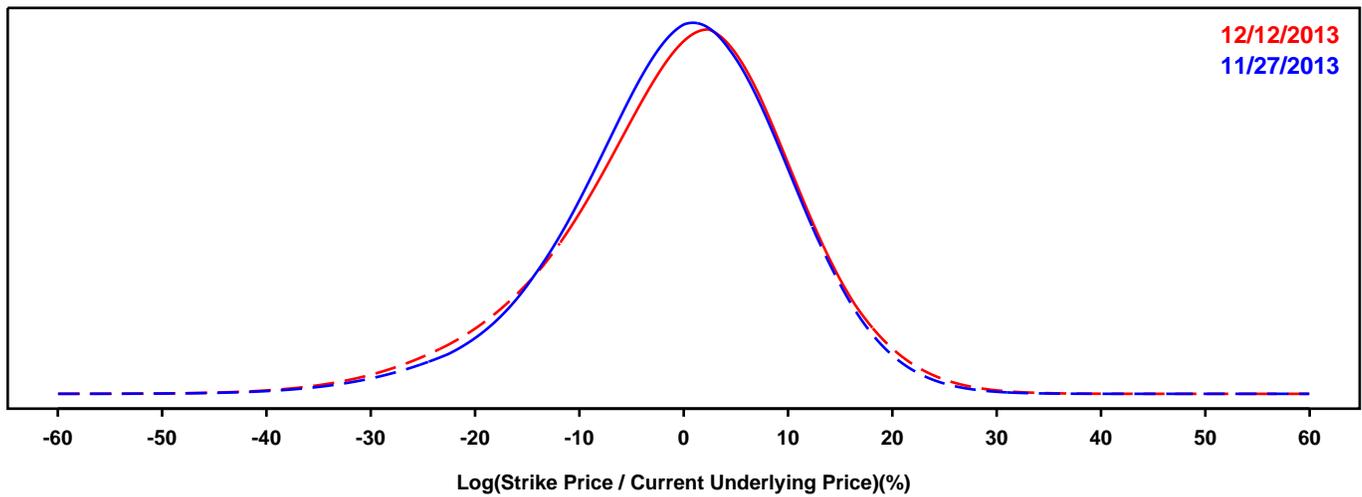*derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
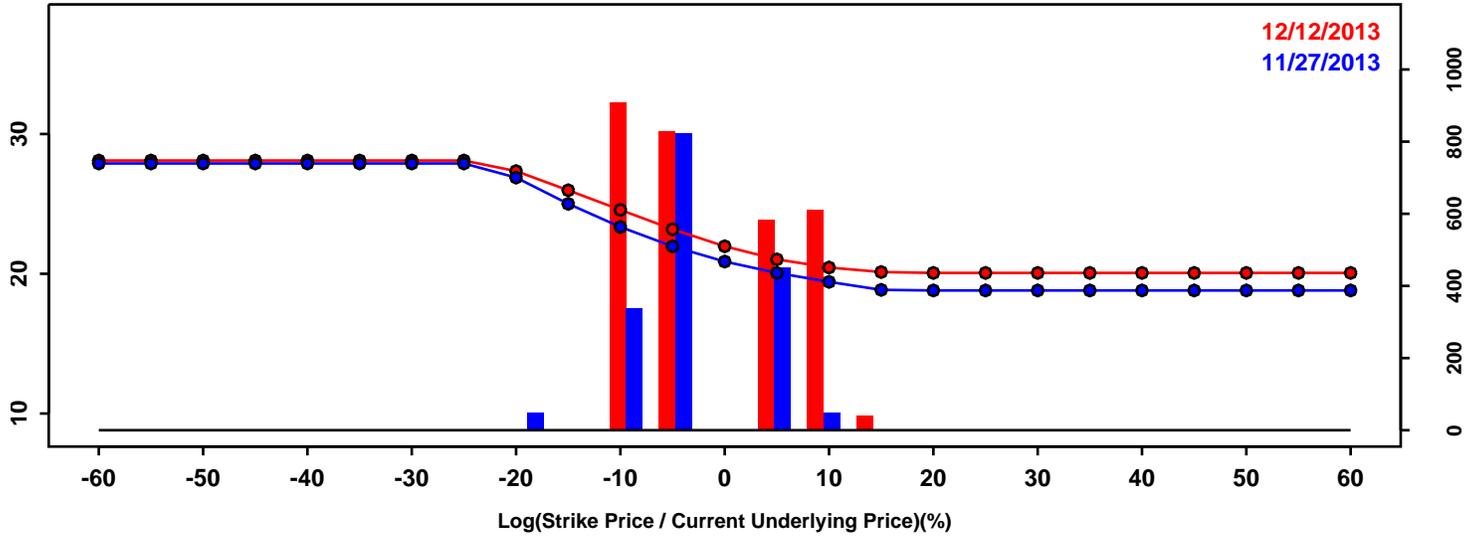
Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-14.14%	-15.23%	-1.09%
50th Pct	0.09%	0.41%	0.31%
90th Pct	12.06%	12.57%	0.51%
Mean	-0.61%	-0.55%	0.06%
Std Dev	10.55%	11.14%	0.59%
Skew	-0.47%	-0.49	-0.02
Kurtosis	0.68	0.61	-0.07

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- KEYCORP

*Log returns are based on the risk neutral density function of the underlying asset
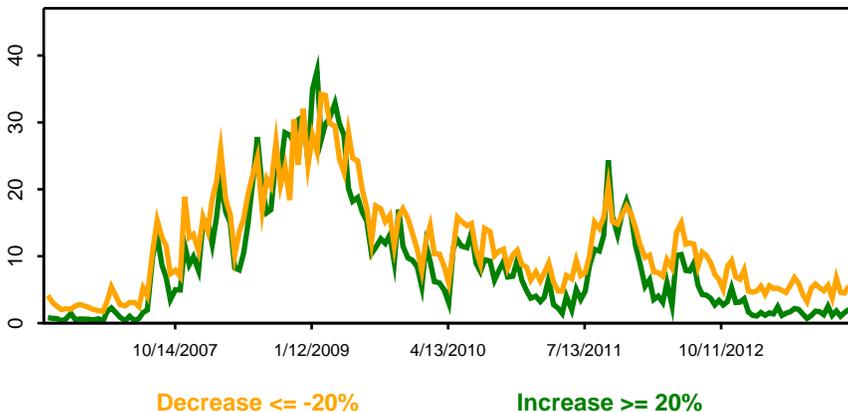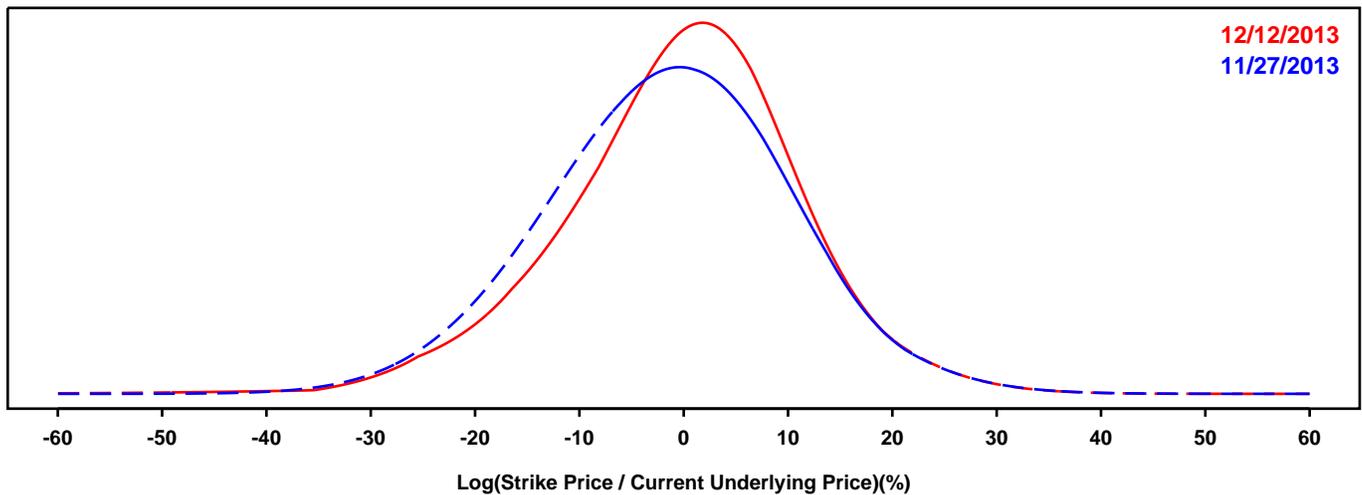derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
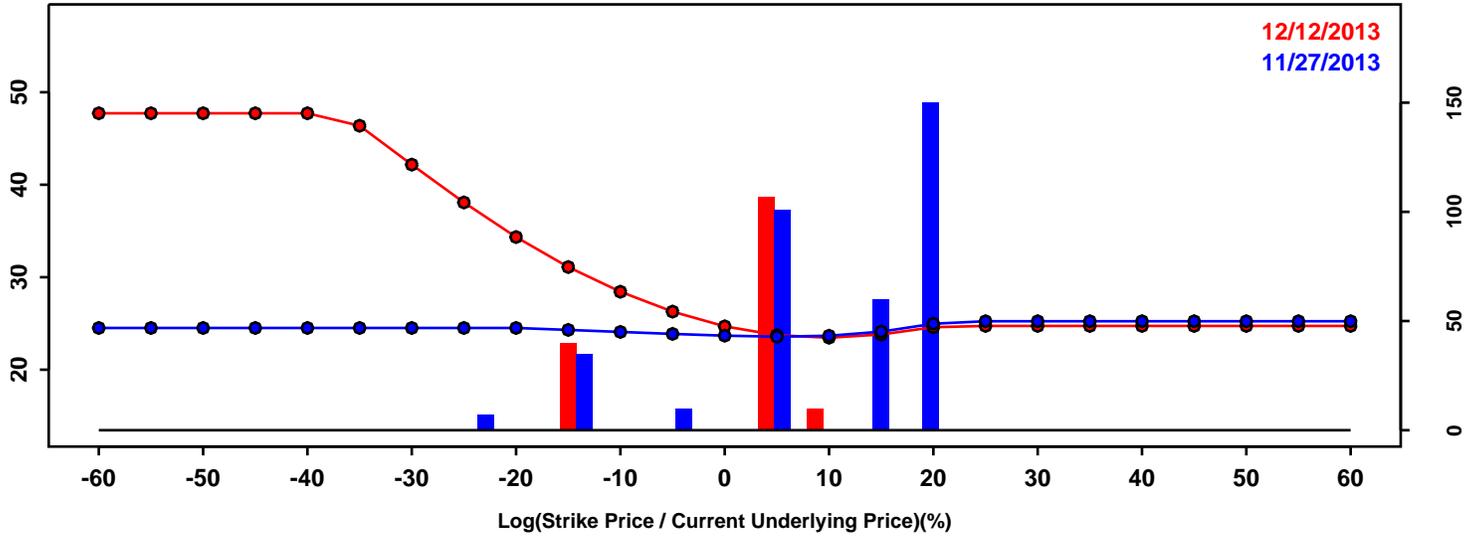
Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-16.72%	-15.10%	1.62%
50th Pct	-1.19%	0.47%	1.66%
90th Pct	13.28%	13.40%	0.12%
Mean	-1.41%	-0.24%	1.17%
Std Dev	11.82%	11.62%	-0.20%
Skew	-0.06%	-0.42	-0.36
Kurtosis	0.14	1.38	1.24

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- MORGAN STANLEY

*Log returns are based on the risk neutral density function of the underlying asset
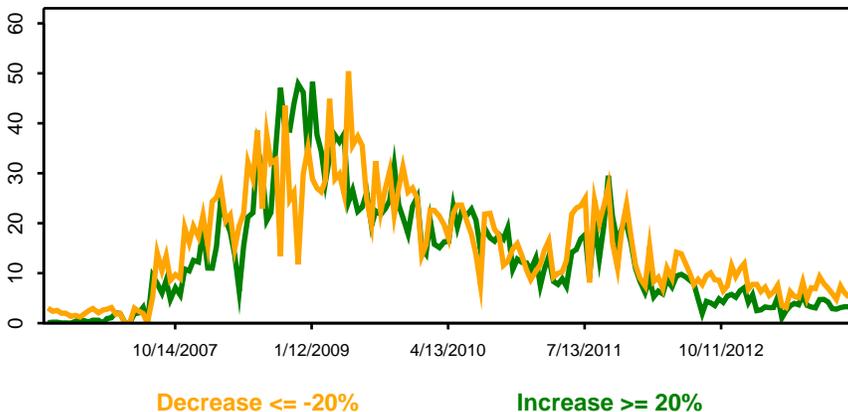derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)
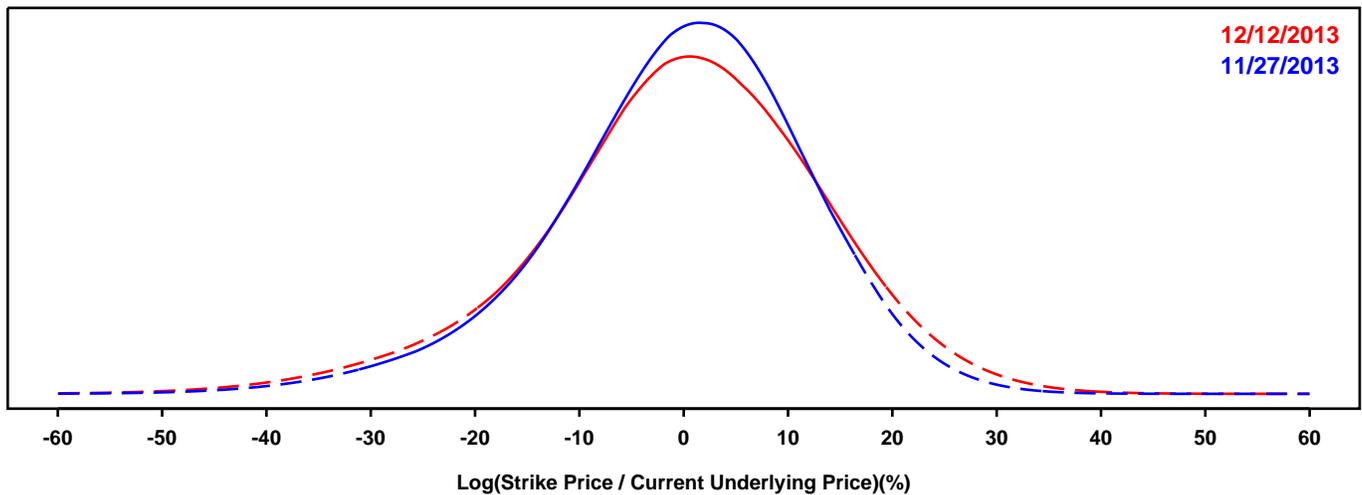

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
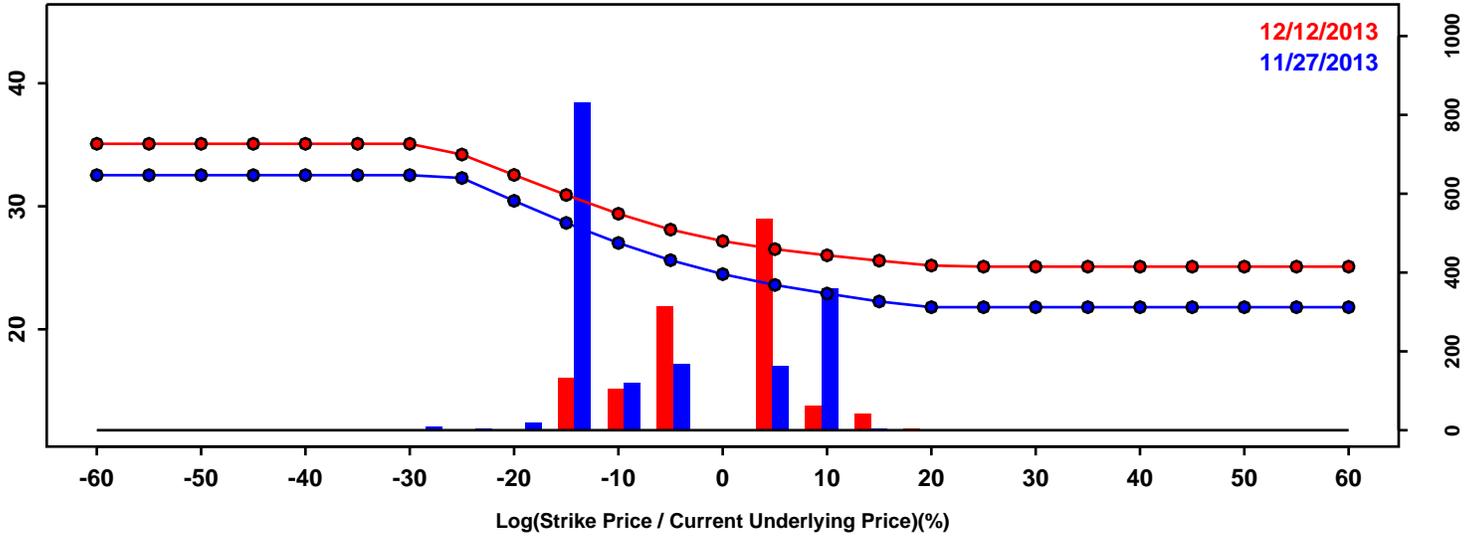
Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-16.17%	-17.70%	-1.53%
50th Pct	0.55%	0.46%	-0.10%
90th Pct	14.57%	16.36%	1.79%
Mean	-0.28%	-0.21%	0.07%
Std Dev	12.38%	13.70%	1.32%
Skew	-0.48%	-0.42	0.07
Kurtosis	0.70	0.64	-0.05

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- PNC FINANCIAL

Log returns are based on the risk neutral density function of the underlying asset derived from options that expire in approximately 3 months.
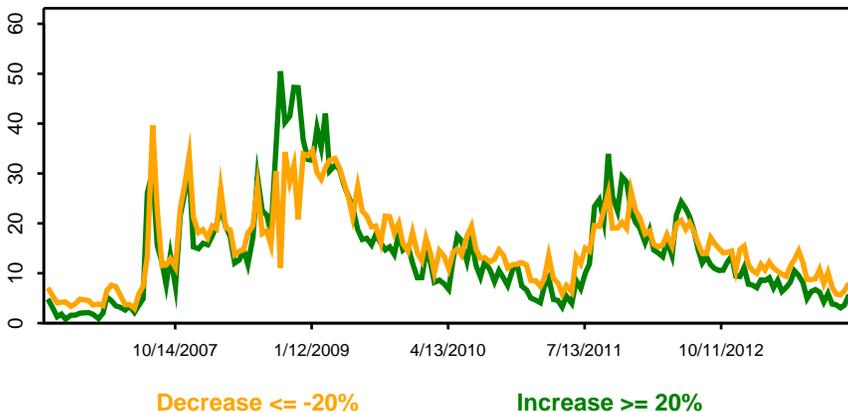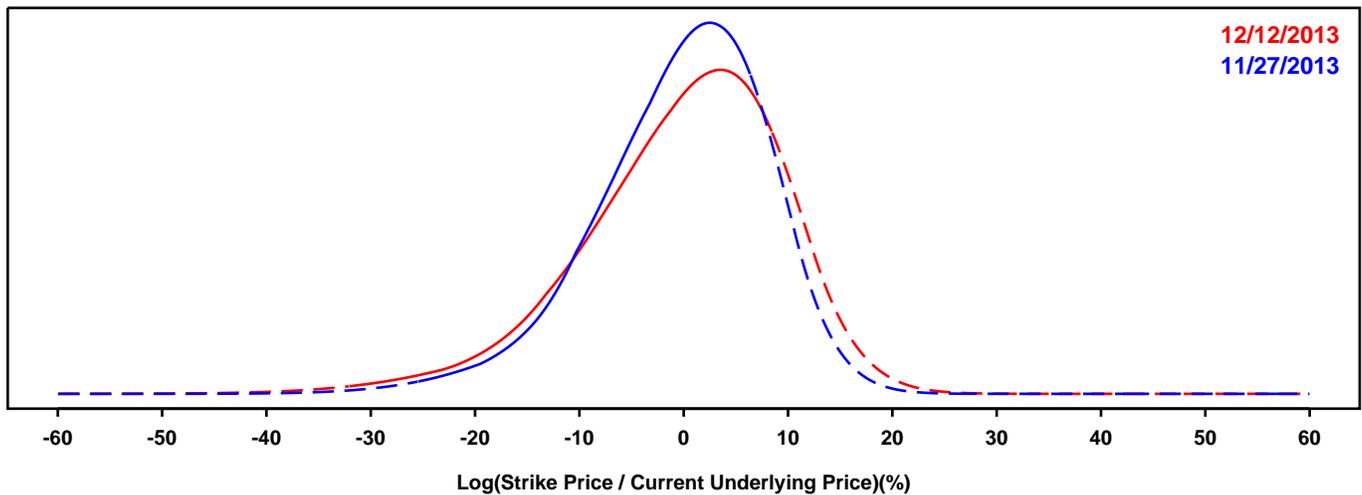
Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
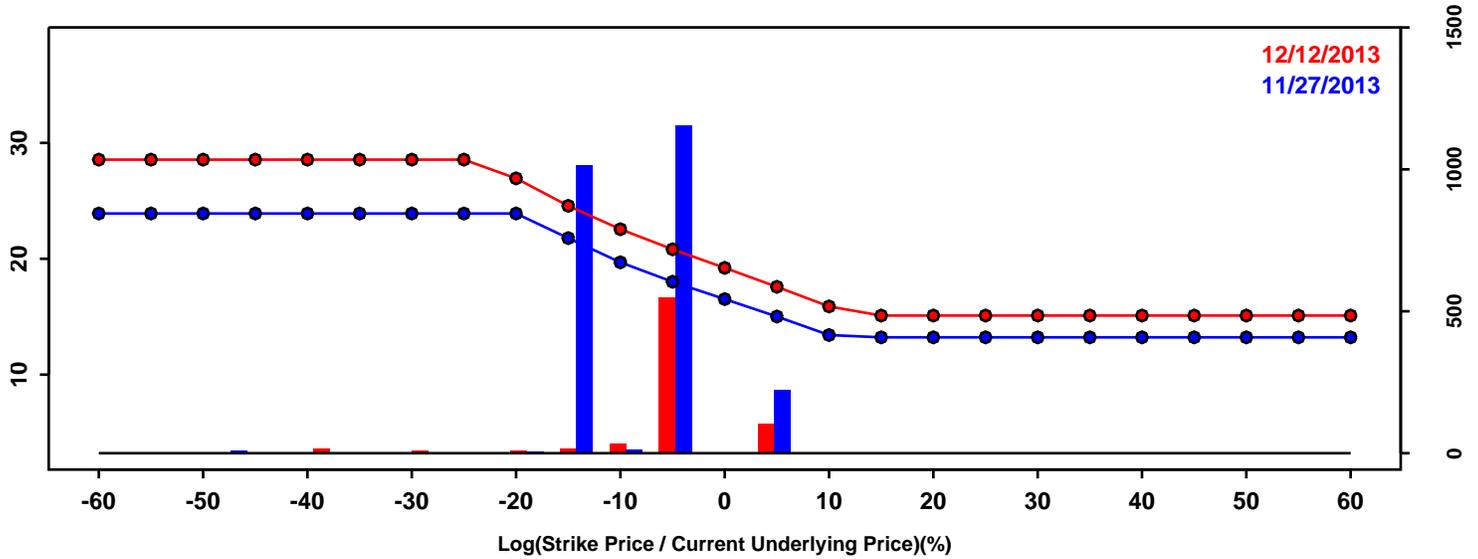
Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-11.17%	-12.99%	-1.82%
50th Pct	0.60%	0.96%	0.36%
90th Pct	9.45%	11.06%	1.61%
Mean	-0.30%	-0.18%	0.12%
Std Dev	8.38%	9.78%	1.40%
Skew	-0.67%	-0.73%	-0.06%
Kurtosis	0.88	1.01	0.12

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- REGIONS FINANCIAL

Log returns are based on the risk neutral density function of the underlying asset derived from options that expire in approximately 3 months.
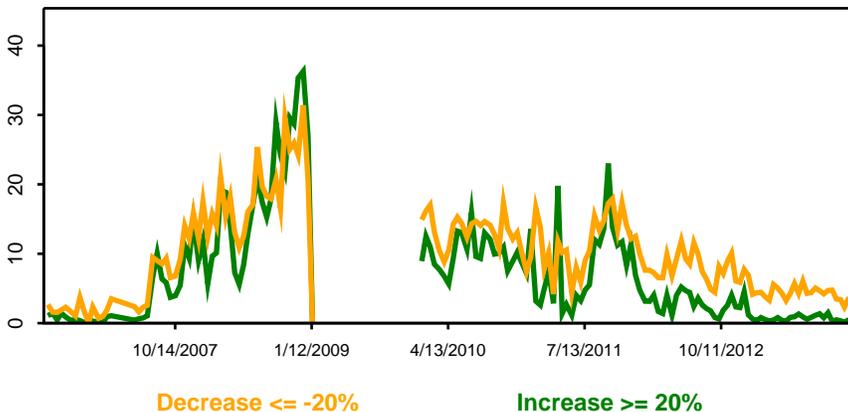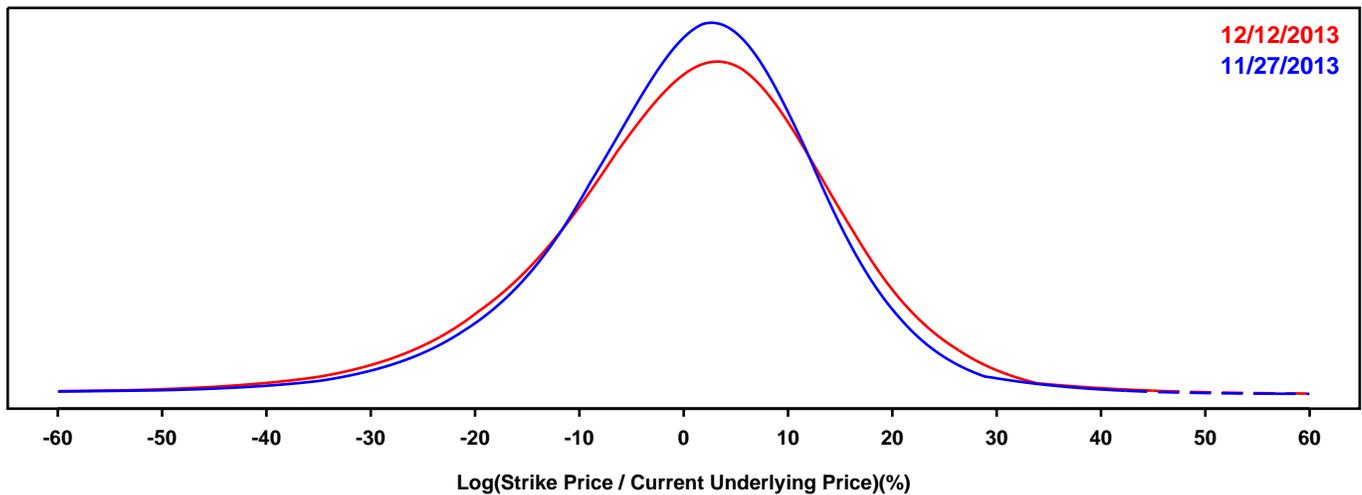
Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
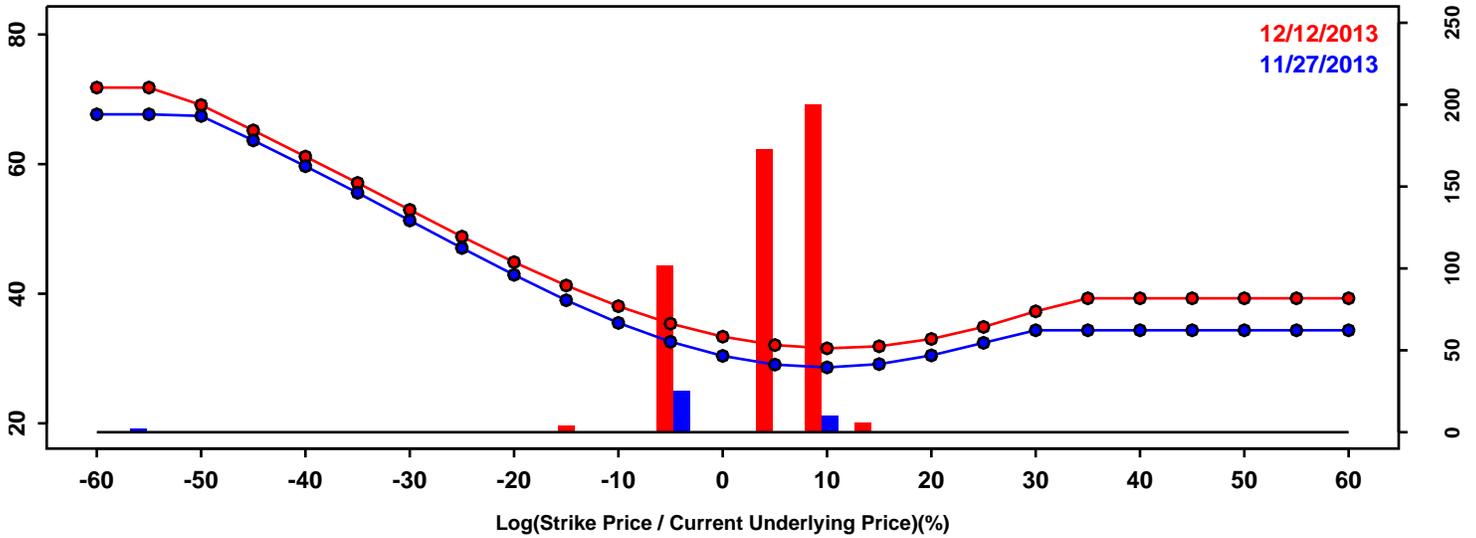
Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-16.00%	-17.75%	-1.75%
50th Pct	1.42%	1.61%	0.19%
90th Pct	15.60%	17.41%	1.81%
Mean	0.31%	0.39%	0.07%
Std Dev	13.97%	15.36%	1.38%
Skew	-0.97	-0.92	0.05
Kurtosis	4.29	3.82	-0.47

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- SUNTRUST

*Log returns are based on the risk neutral density function of the underlying asset
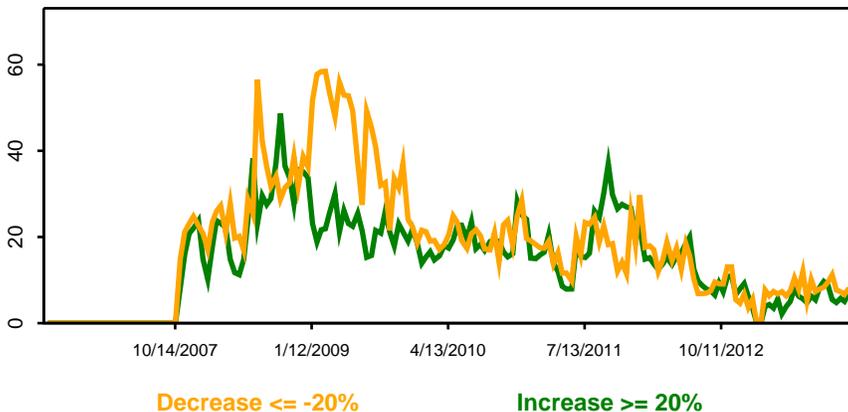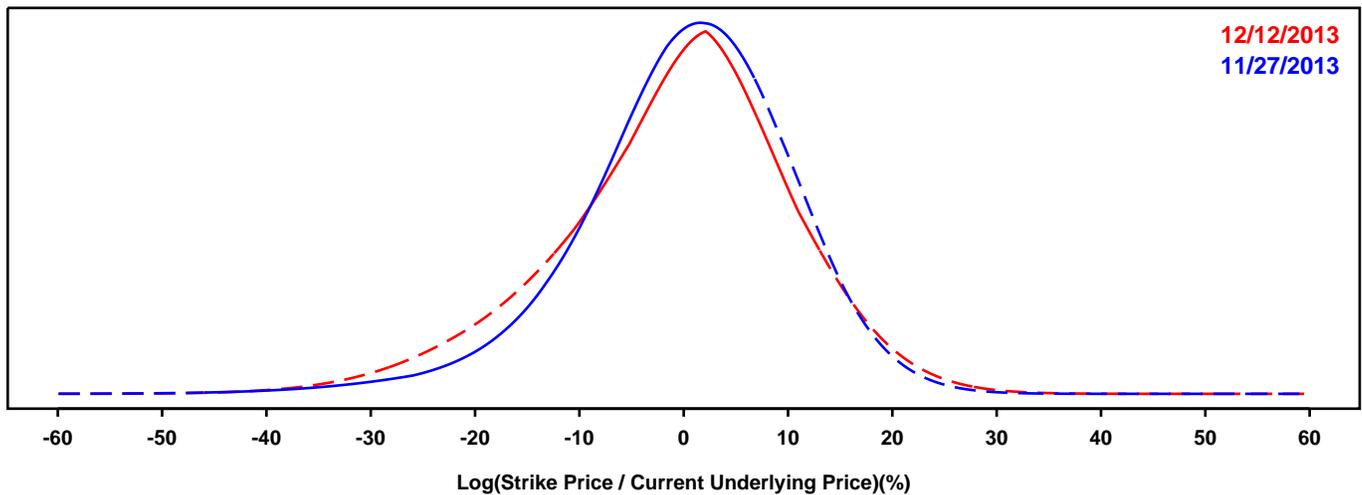derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
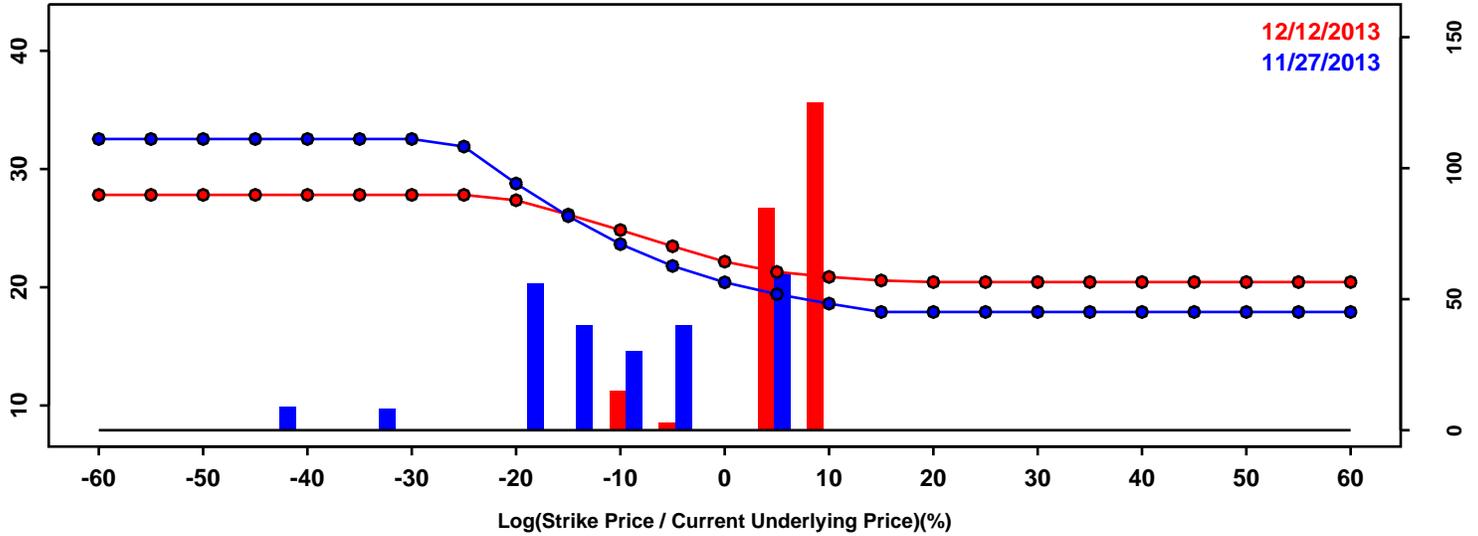
Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-12.65%	-16.14%	-3.49%
50th Pct	0.89%	0.19%	-0.70%
90th Pct	12.36%	12.64%	0.27%
Mean	0.21%	-0.87%	-1.08%
Std Dev	10.28%	11.41%	1.13%
Skew	-0.63	-0.47	0.16
Kurtosis	1.29	0.54	-0.75

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- STATE STREET

*Log returns are based on the risk neutral density function of the underlying asset
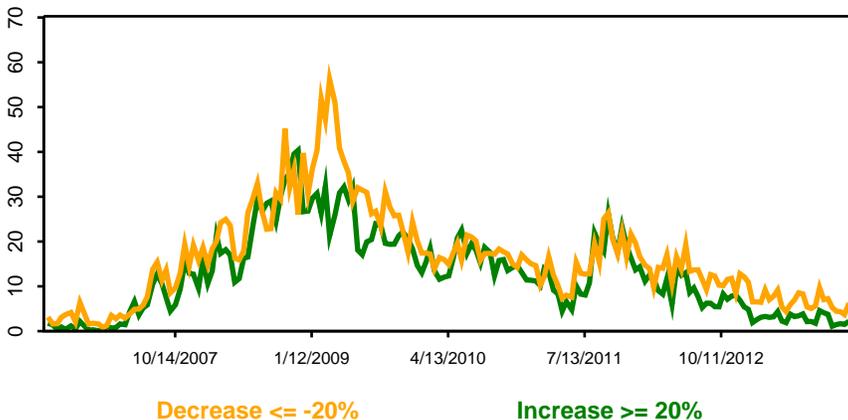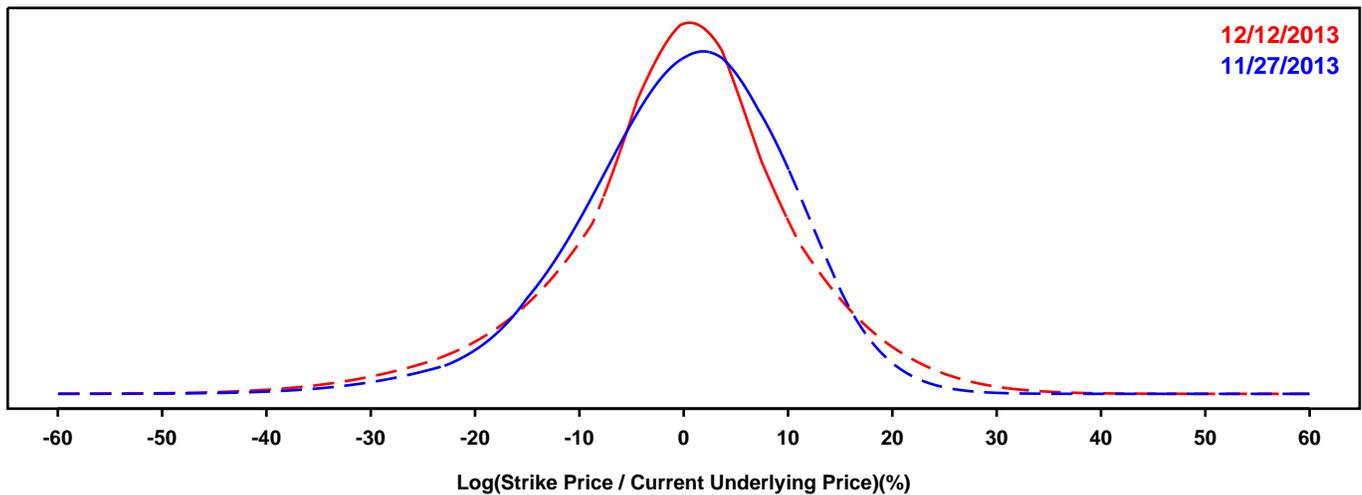derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
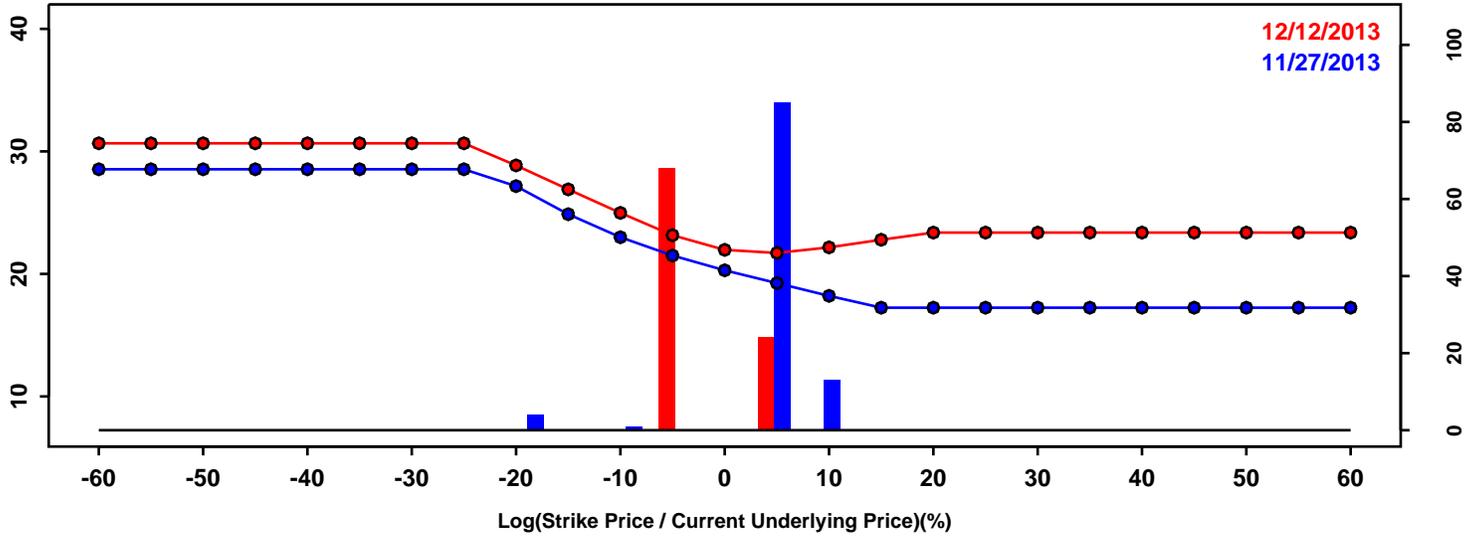
Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-13.30%	-14.54%	-1.24%
50th Pct	0.51%	0.15%	-0.35%
90th Pct	12.02%	12.89%	0.86%
Mean	-0.22%	-0.41%	-0.19%
Std Dev	10.19%	11.23%	1.04%
Skew	-0.53	-0.41	0.12
Kurtosis	0.76	1.16	0.40

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- US BANCORP

*Log returns are based on the risk neutral density function of the underlying asset
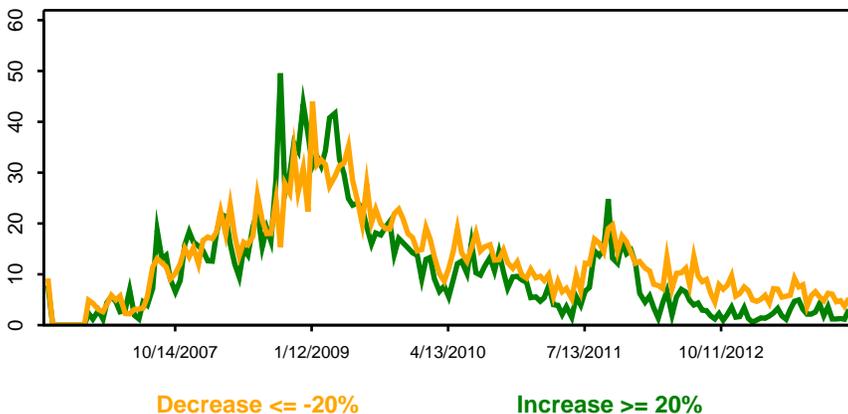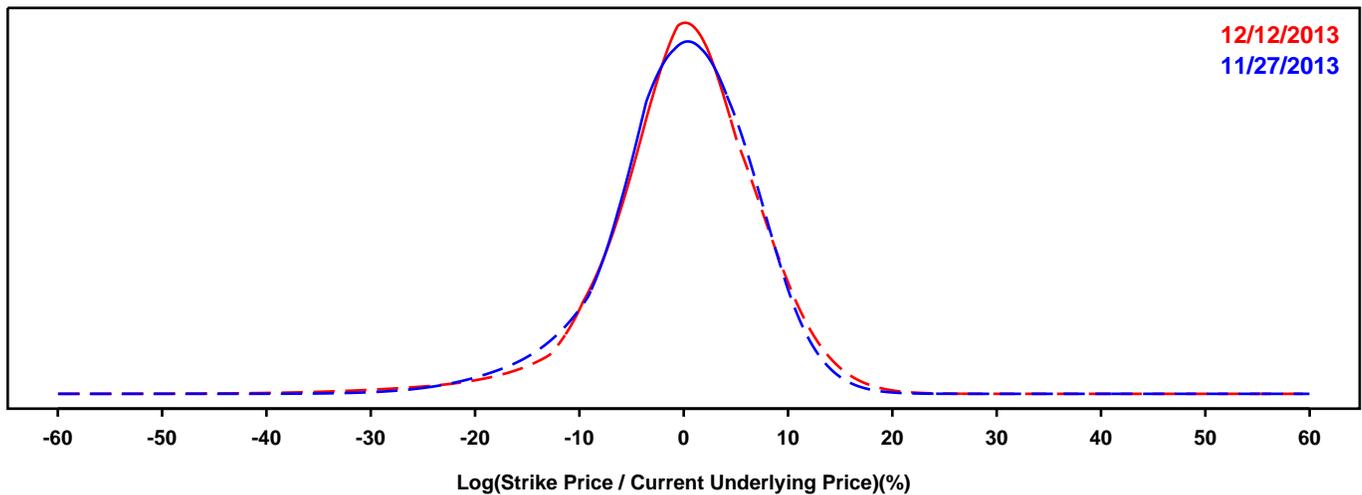derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
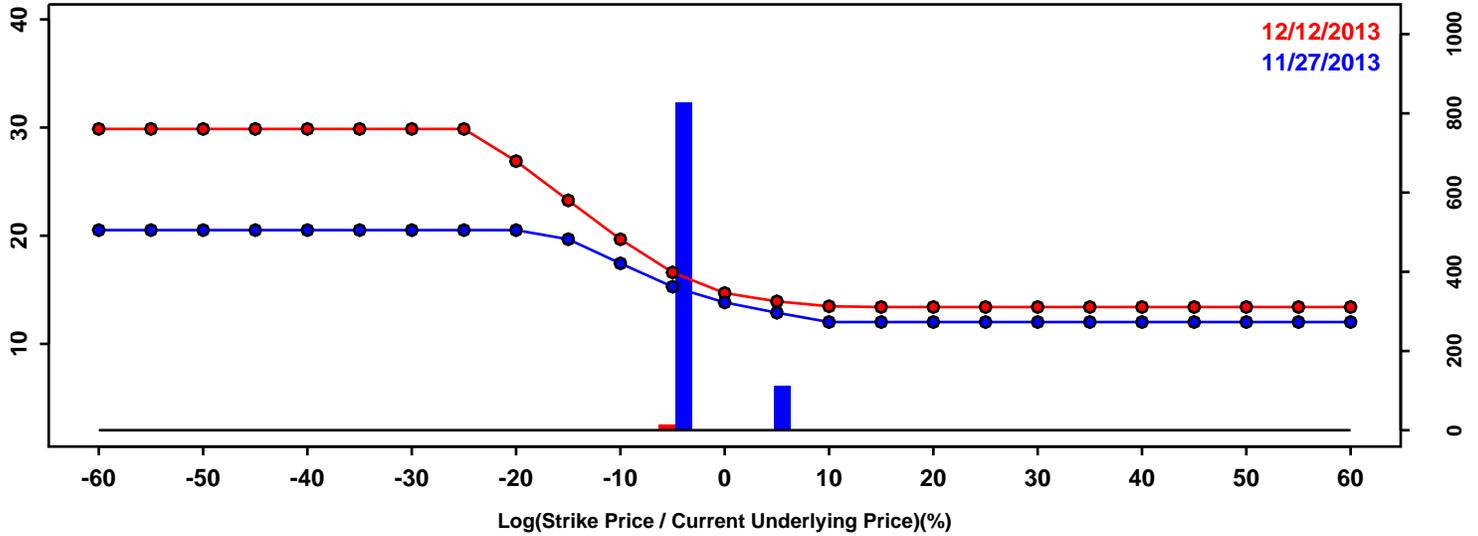
Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-9.14%	-8.75%	0.39%
50th Pct	0.14%	0.31%	0.17%
90th Pct	8.01%	8.55%	0.54%
Mean	-0.33%	-0.12%	0.21%
Std Dev	7.06%	7.50%	0.44%
Skew	-0.65%	-0.93	-0.28
Kurtosis	1.18	3.06	1.89

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- WELLS FARGO

Log returns are based on the risk neutral density function of the underlying asset
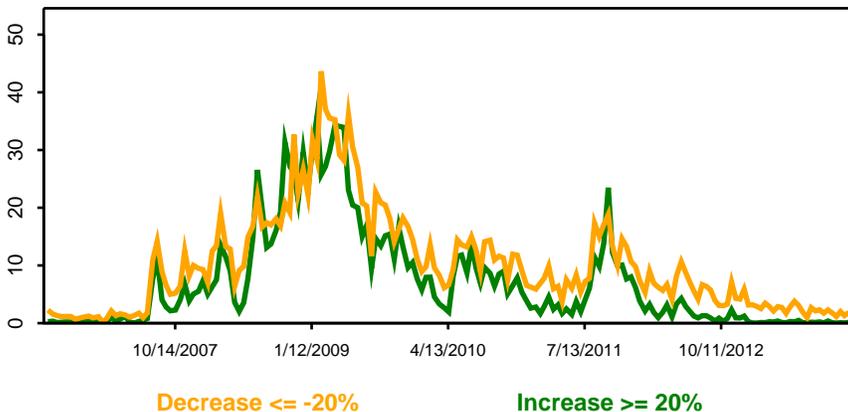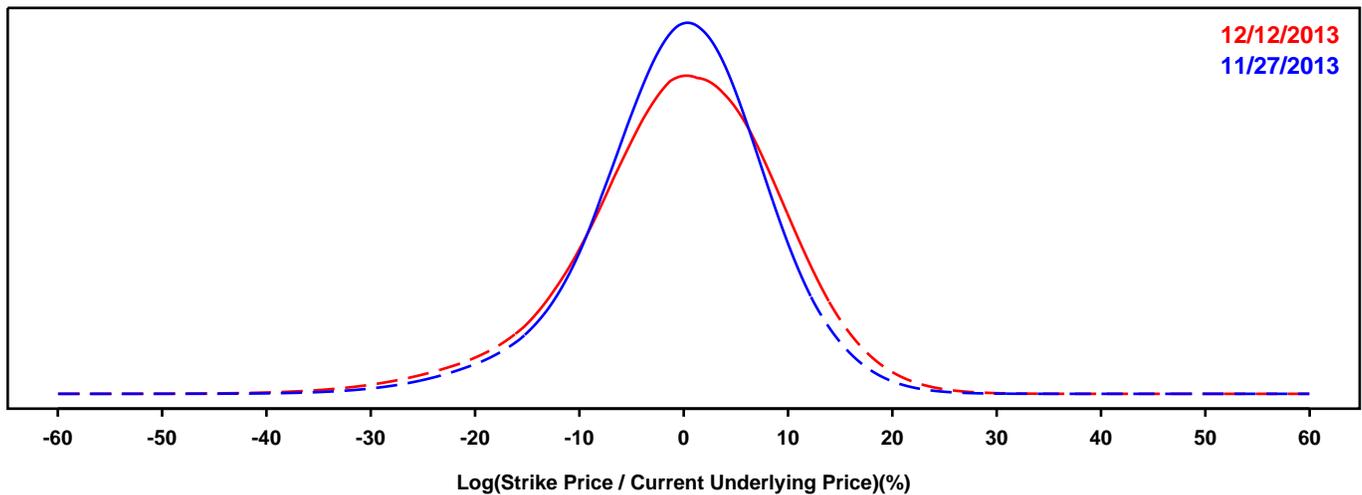*derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
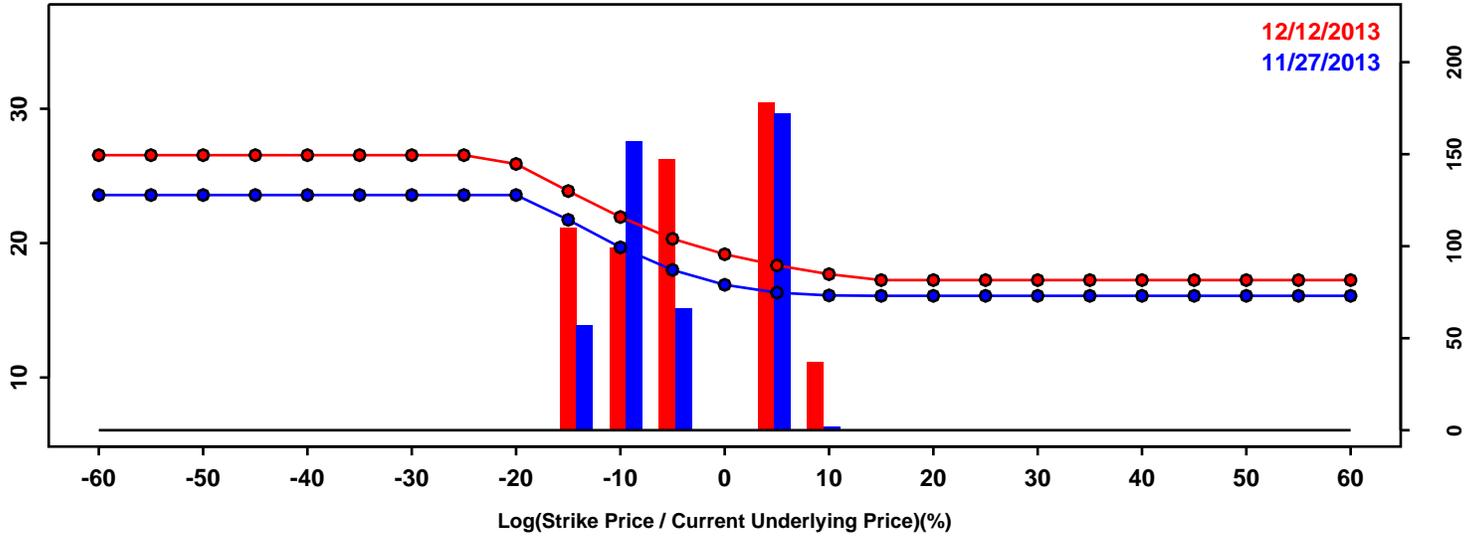
Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-11.22%	-12.59%	-1.37%
50th Pct	-0.09%	0.20%	0.29%
90th Pct	9.62%	11.15%	1.53%
Mean	-0.56%	-0.37%	0.19%
Std Dev	8.53%	9.67%	1.14%
Skew	-0.47%	-0.52	-0.05
Kurtosis	0.94	0.86	-0.08

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- AFLAC

*Log returns are based on the risk neutral density function of the underlying asset
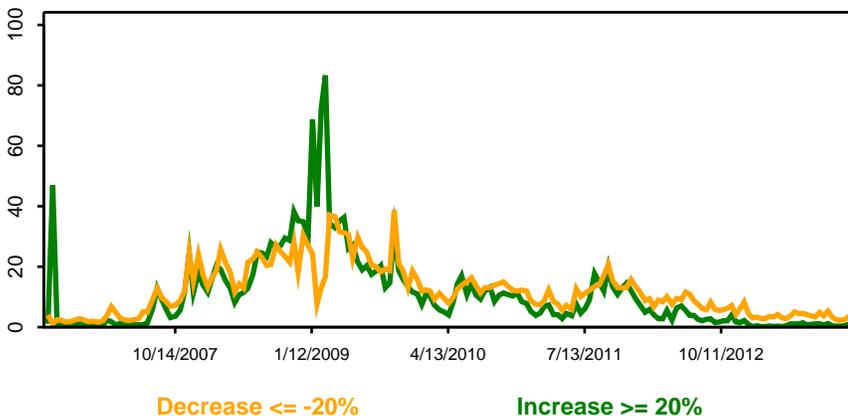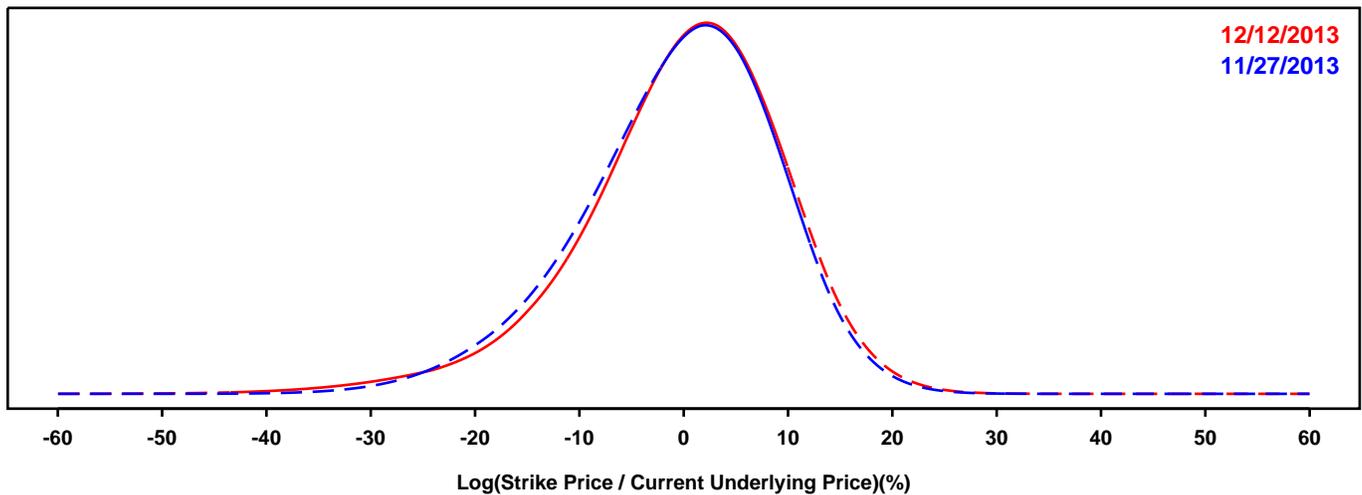derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
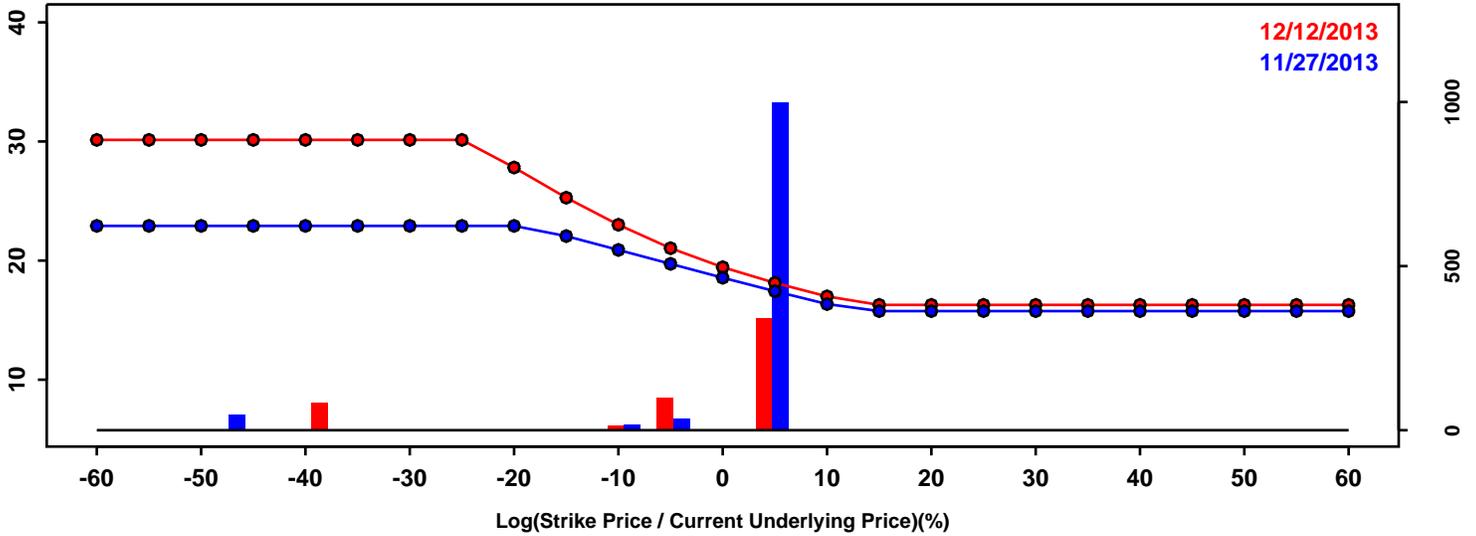
Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-13.14%	-12.76%	0.38%
50th Pct	0.32%	0.76%	0.44%
90th Pct	10.70%	11.24%	0.54%
Mean	-0.51%	-0.19%	0.32%
Std Dev	9.43%	9.88%	0.44%
Skew	-0.48	-0.72	-0.24
Kurtosis	0.37	1.29	0.92

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- AIG

Log returns are based on the risk neutral density function of the underlying asset derived from options that expire in approximately 3 months.
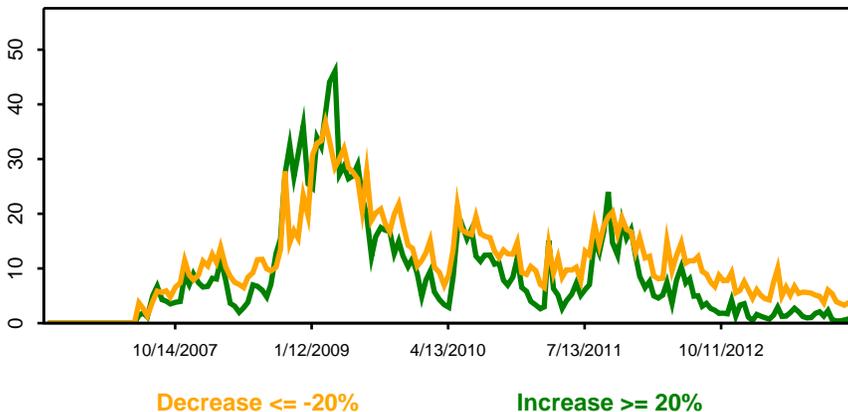
Implied Volatilities (lines--left axis) and Volume (bars--right axis)

Risk Neutral PDF of the Log Return Distribution
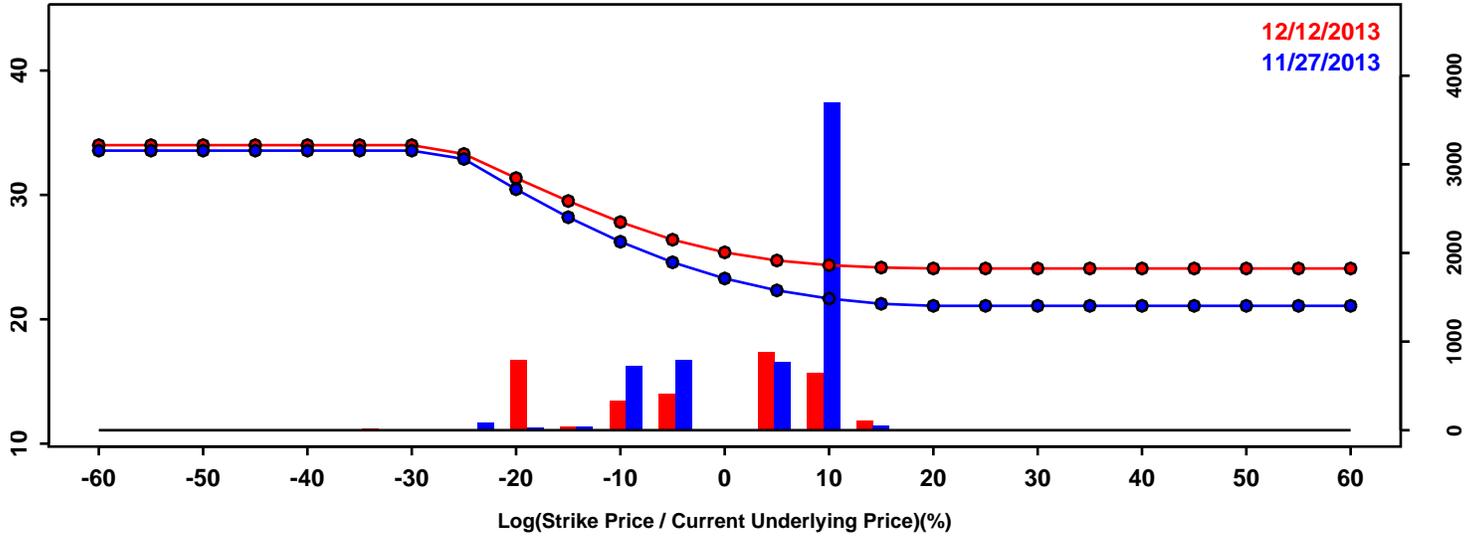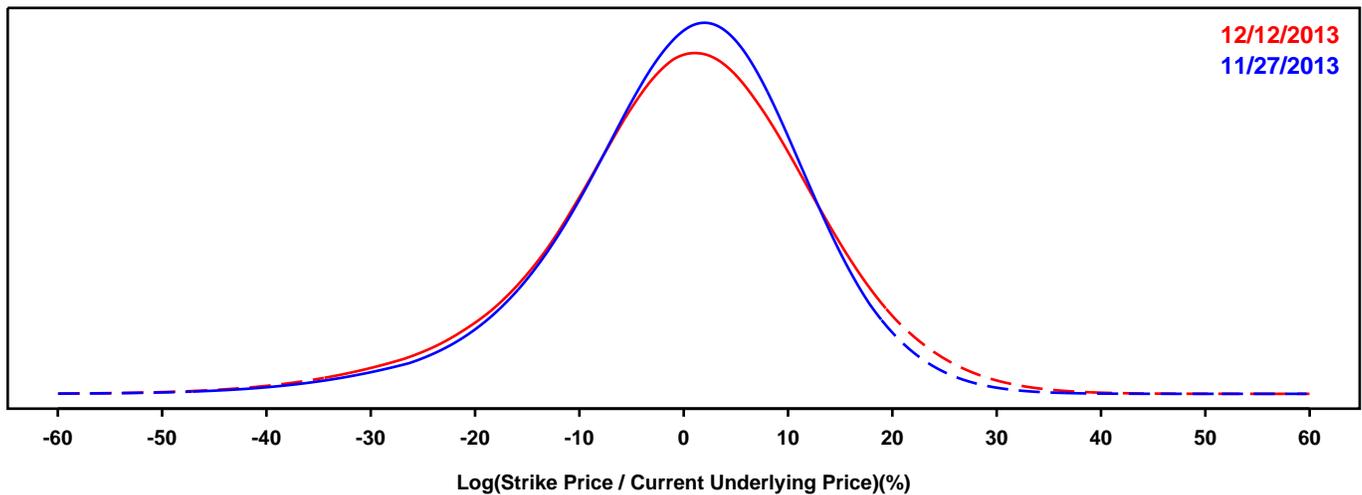

Probability of a Large Change

Decrease <= -20%　　**Increase >= 20%**

Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-15.15%	-16.22%	-1.08%
50th Pct	0.69%	0.56%	-0.13%
90th Pct	13.65%	15.17%	1.52%
Mean	-0.21%	-0.12%	0.08%
Std Dev	11.77%	12.75%	0.99%
Skew	-0.57	-0.43	0.14
Kurtosis	1.03	0.80	-0.22

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- ALLSTATE

*Log returns are based on the risk neutral density function of the underlying asset
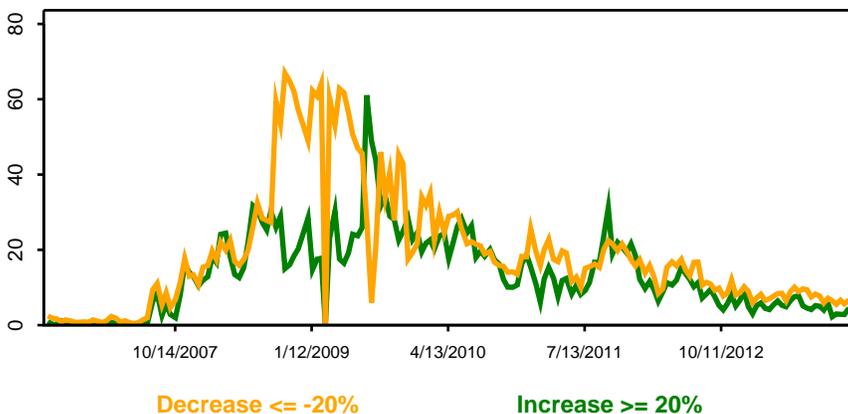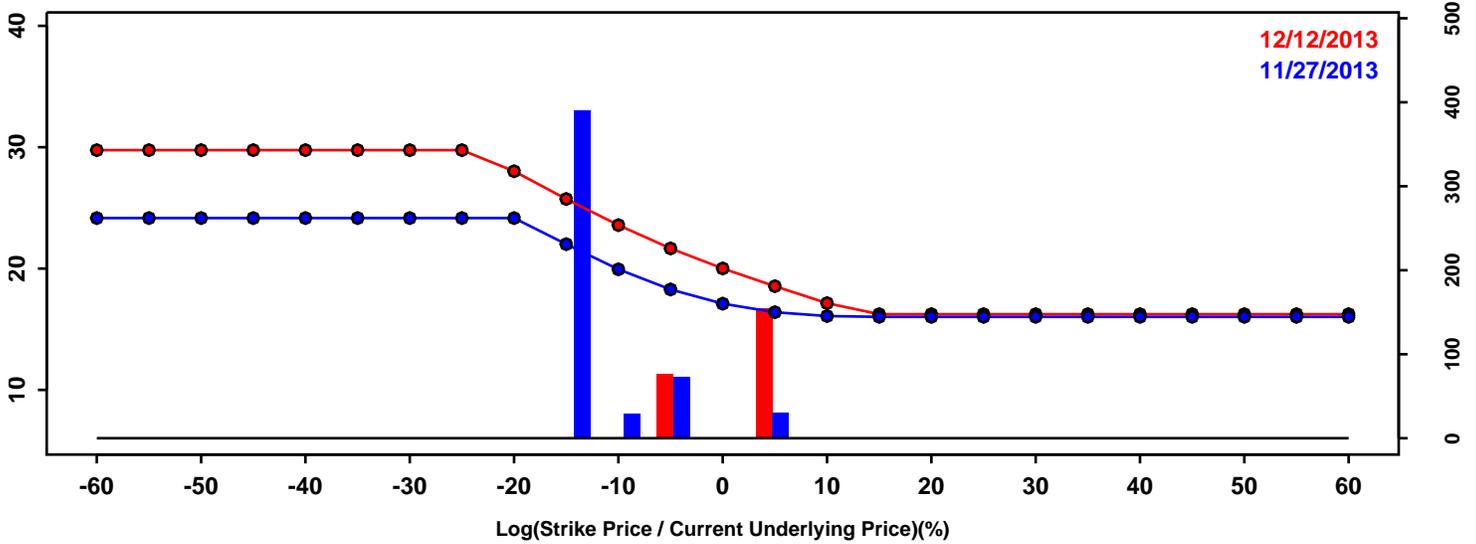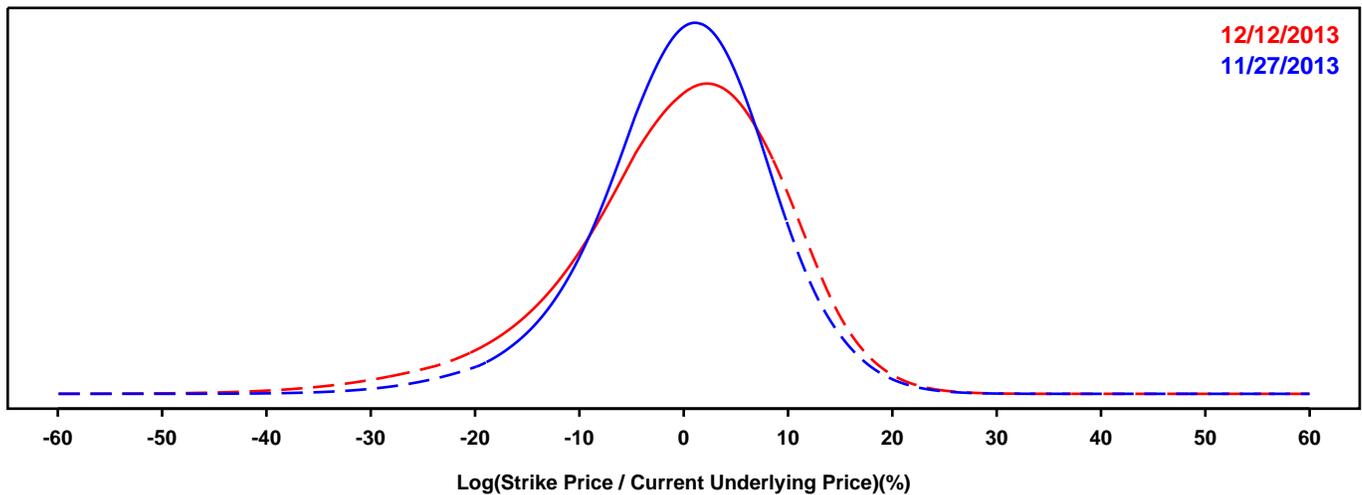derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**

Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-10.89%	-14.11%	-3.22%
50th Pct	0.42%	0.45%	0.03%
90th Pct	10.07%	11.23%	1.16%
Mean	-0.10%	-0.70%	-0.60%
Std Dev	8.57%	10.37%	1.80%
Skew	-0.47%	-0.76	-0.28
Kurtosis	0.91	1.15	0.24

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- AMERIPRISE

Log returns are based on the risk neutral density function of the underlying asset
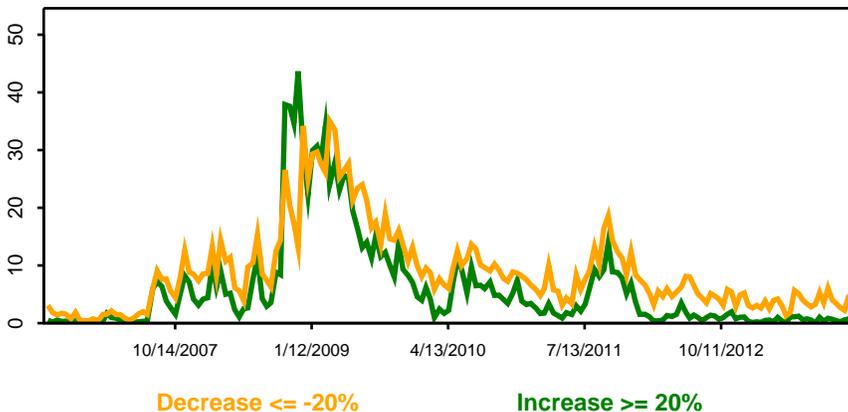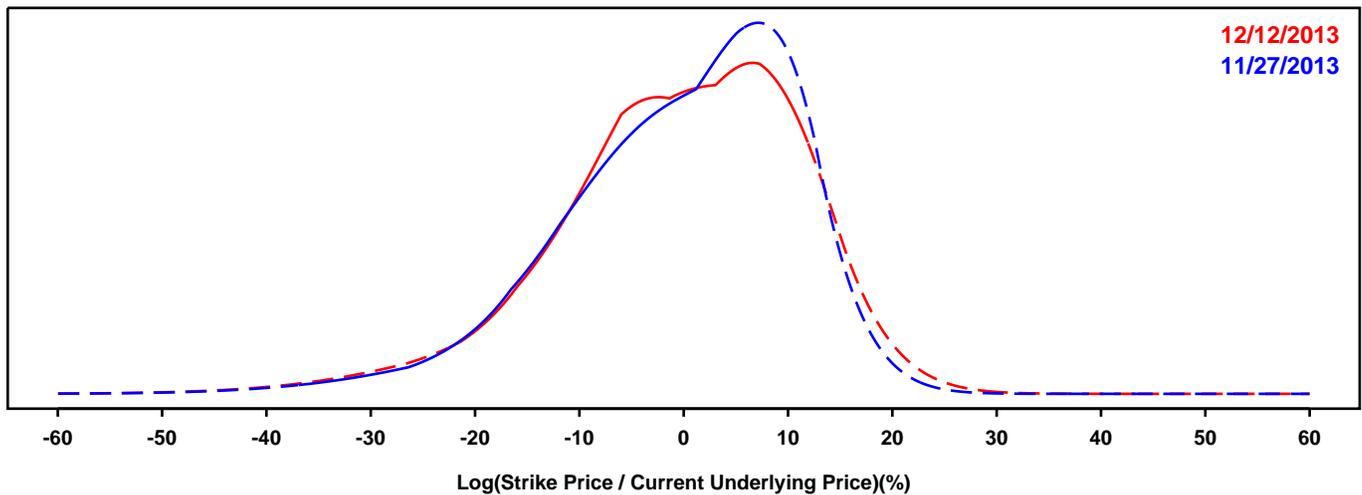*derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%　　　**Increase >= 20%**
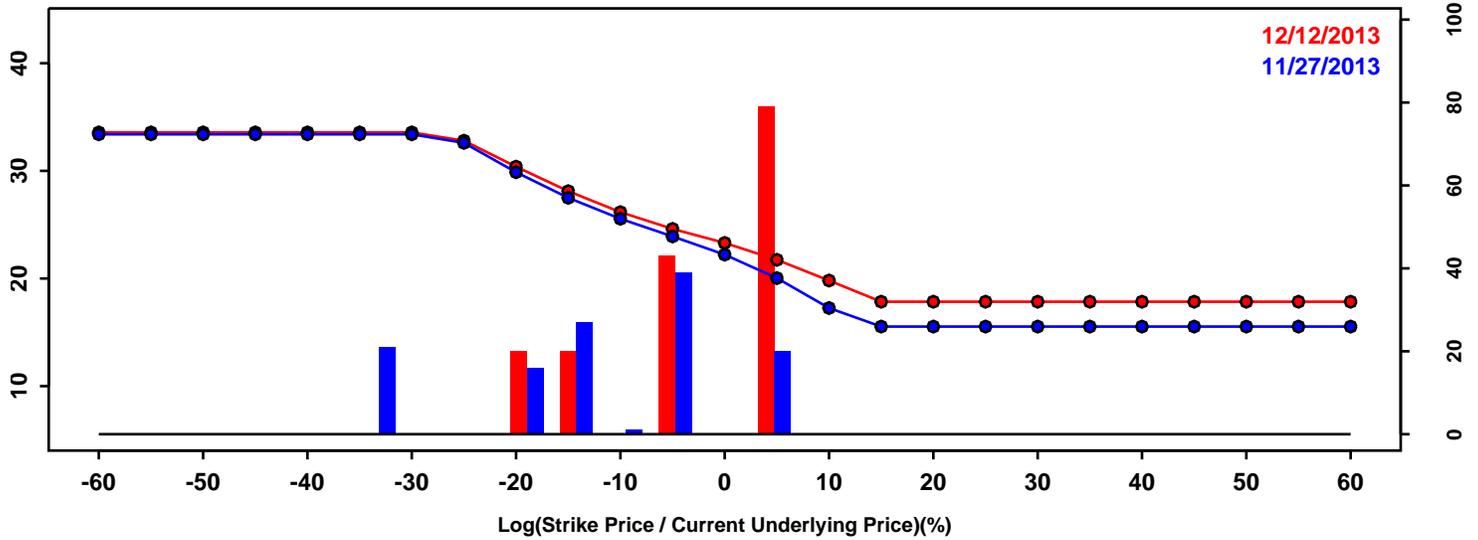
Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-15.20%	-15.45%	-0.25%
50th Pct	1.38%	0.76%	-0.61%
90th Pct	12.46%	13.36%	0.90%
Mean	-0.28%	-0.37%	-0.08%
Std Dev	11.31%	11.79%	0.49%
Skew	-0.80	-0.69	0.11
Kurtosis	0.95	0.89	-0.06

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CHUBB

*Log returns are based on the risk neutral density function of the underlying asset
derived from options that expire in approximately 3 months.*

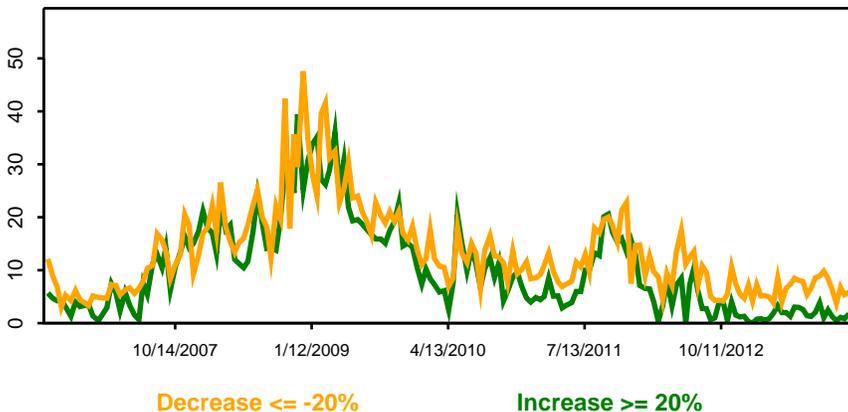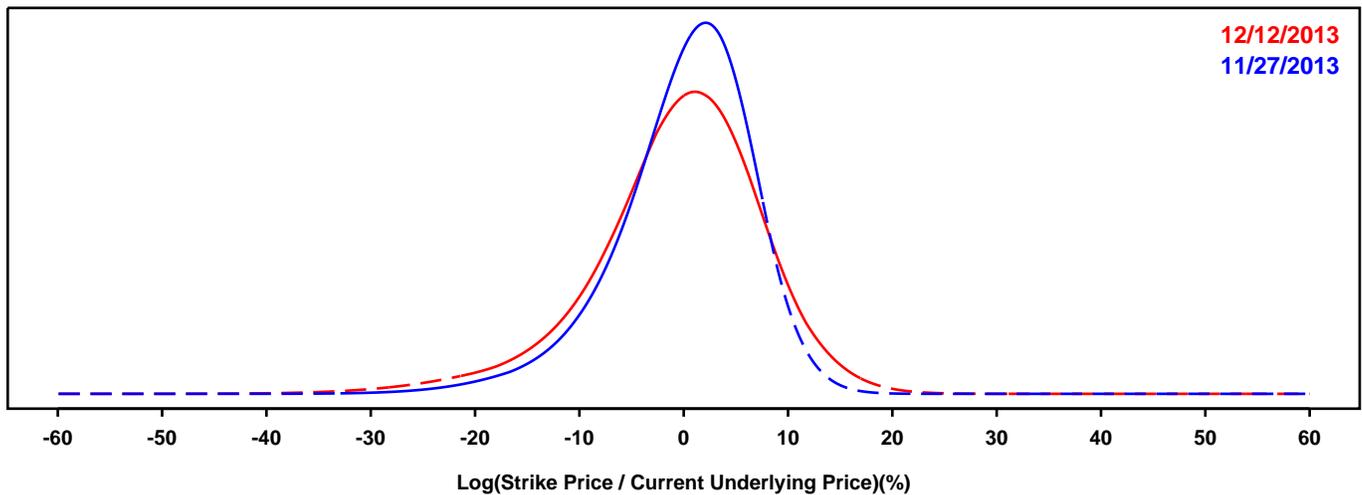### Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
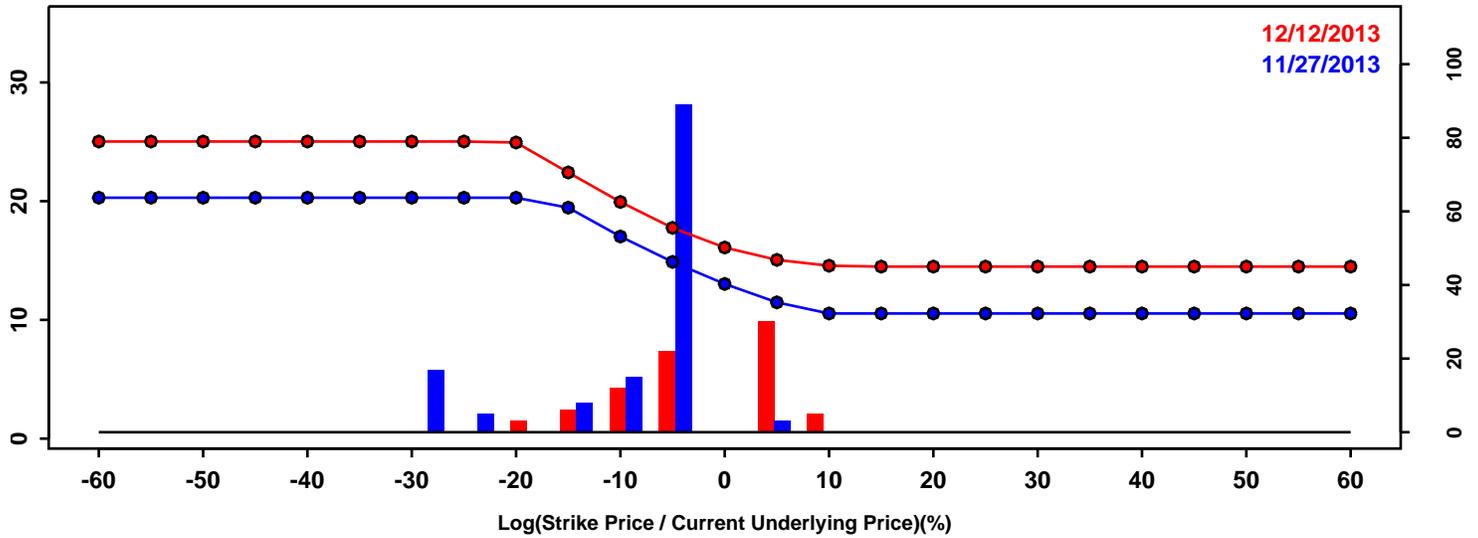
Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-8.53%	-10.96%	-2.44%
50th Pct	0.77%	0.15%	-0.62%
90th Pct	7.51%	8.82%	1.31%
Mean	0.02%	-0.60%	-0.63%
Std Dev	6.62%	8.25%	1.63%
Skew	-0.81	-0.74	0.07
Kurtosis	1.36	1.48	0.12

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- HARTFORD FINANCIAL

*Log returns are based on the risk neutral density function of the underlying asset
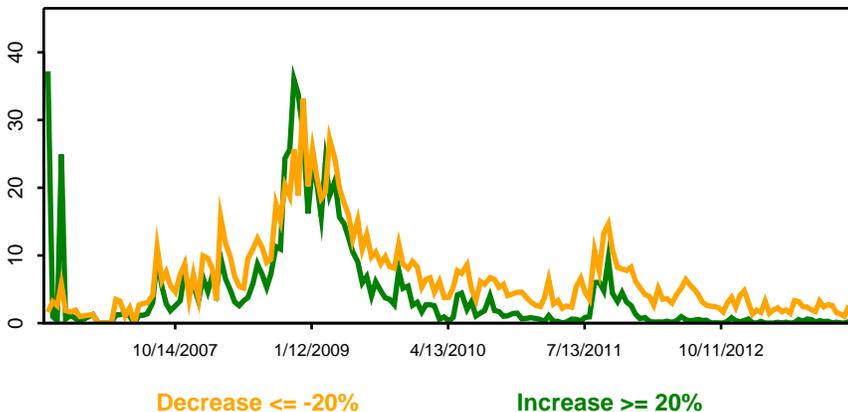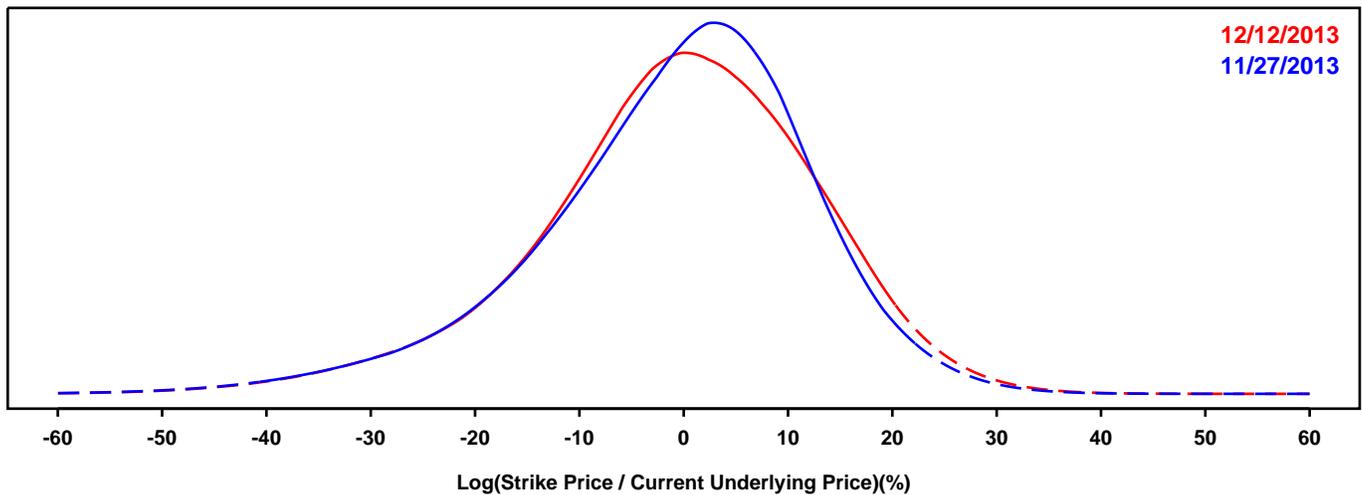derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
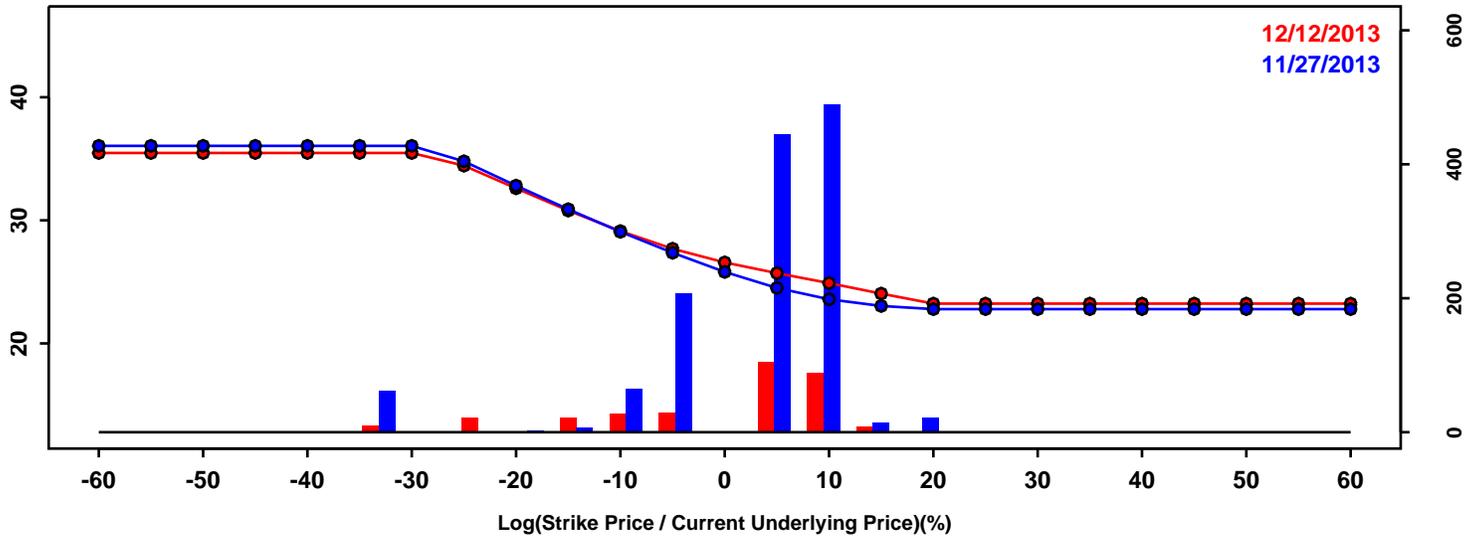
Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-18.17%	-18.09%	0.08%
50th Pct	0.59%	0.17%	-0.42%
90th Pct	14.26%	15.58%	1.32%
Mean	-0.90%	-0.69%	0.21%
Std Dev	13.22%	13.54%	0.32%
Skew	-0.66%	-0.52	0.14
Kurtosis	0.96	0.71	-0.25

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- LINCOLN NATIONAL

*Log returns are based on the risk neutral density function of the underlying asset
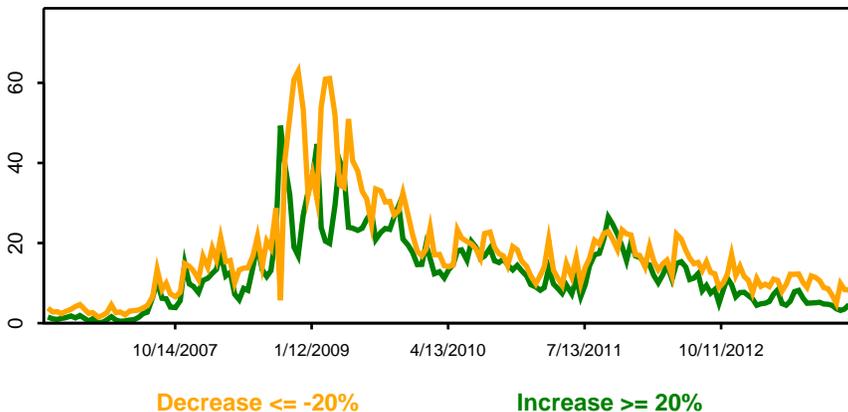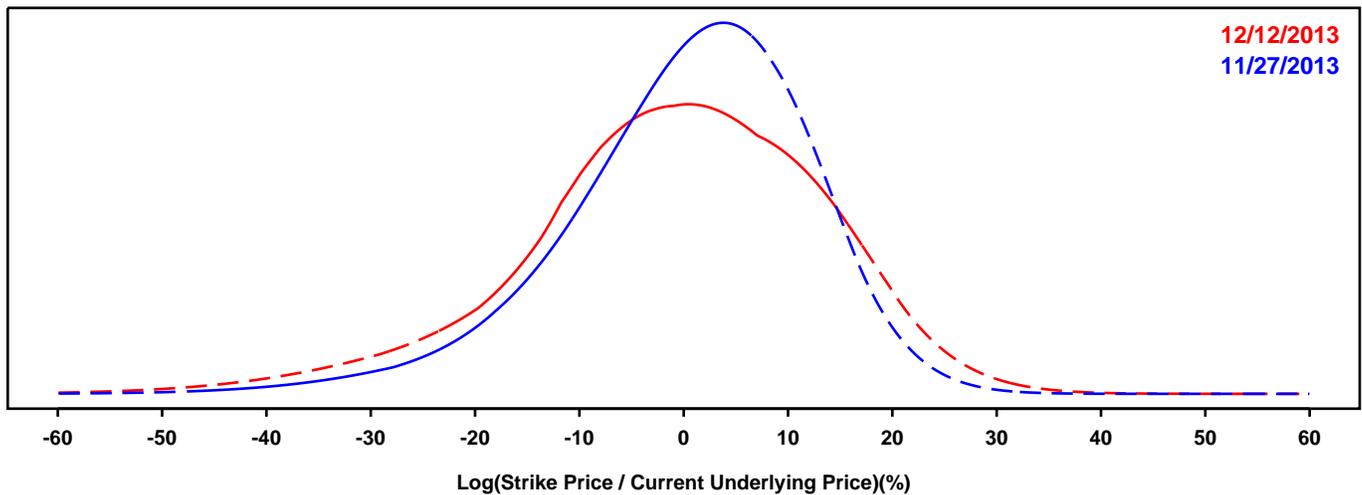derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   Increase >= 20%
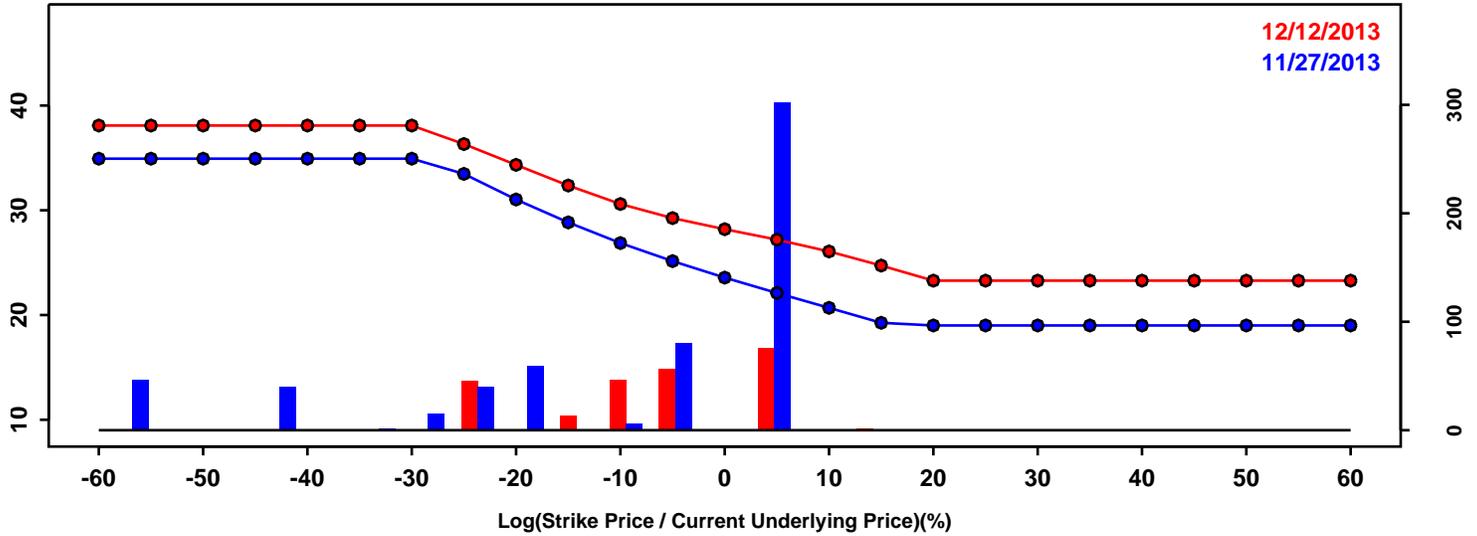
Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-15.09%	-19.35%	-4.26%
50th Pct	1.60%	-0.04%	-1.63%
90th Pct	14.09%	16.44%	2.35%
Mean	0.33%	-0.95%	-1.28%
Std Dev	11.89%	14.44%	2.55%
Skew	-0.71	-0.56	0.15
Kurtosis	1.05	0.72	-0.34

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- PRINCIPAL FINANCIAL

Log returns are based on the risk neutral density function of the underlying asset
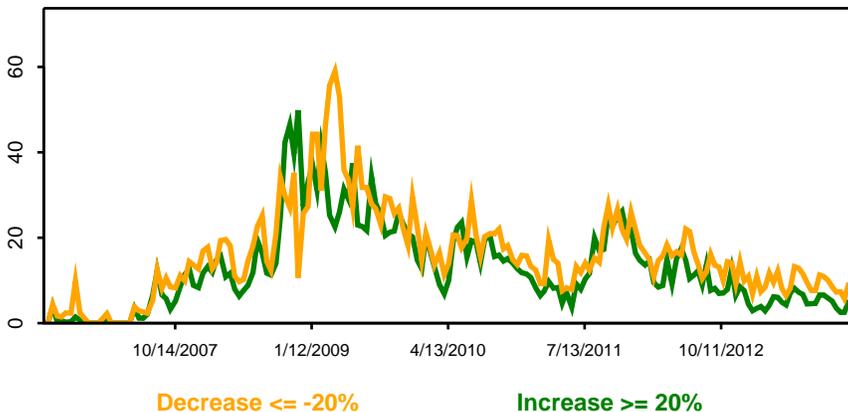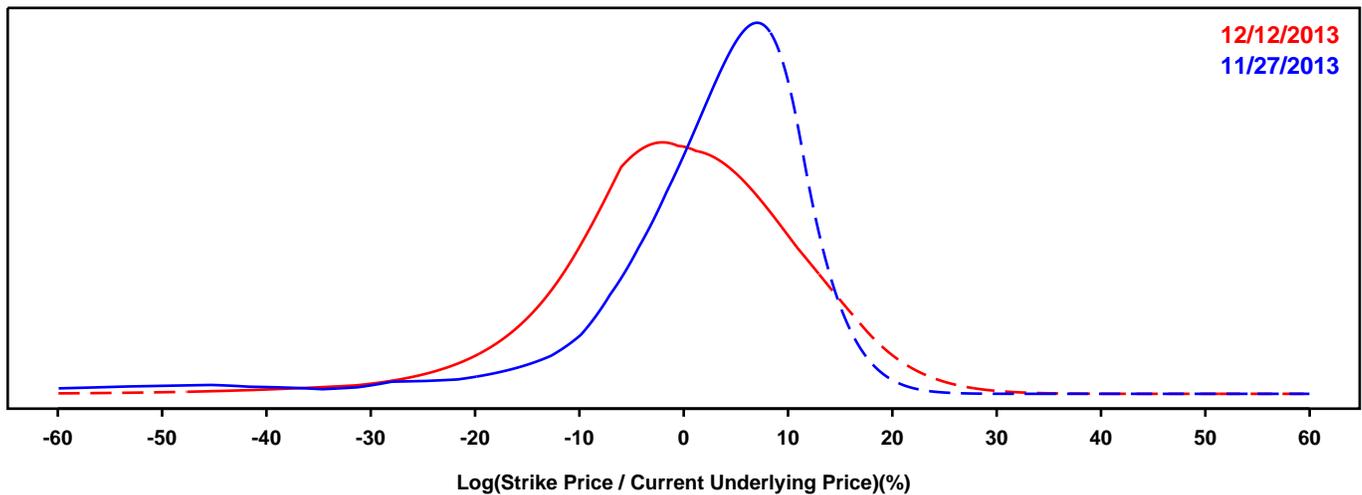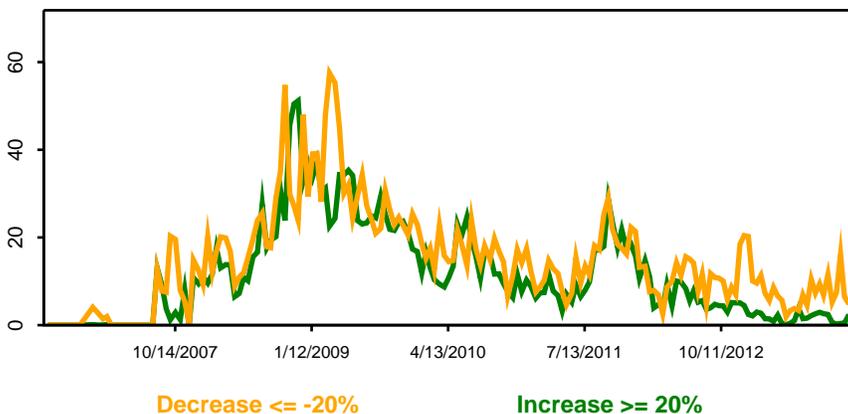*derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   Increase >= 20%
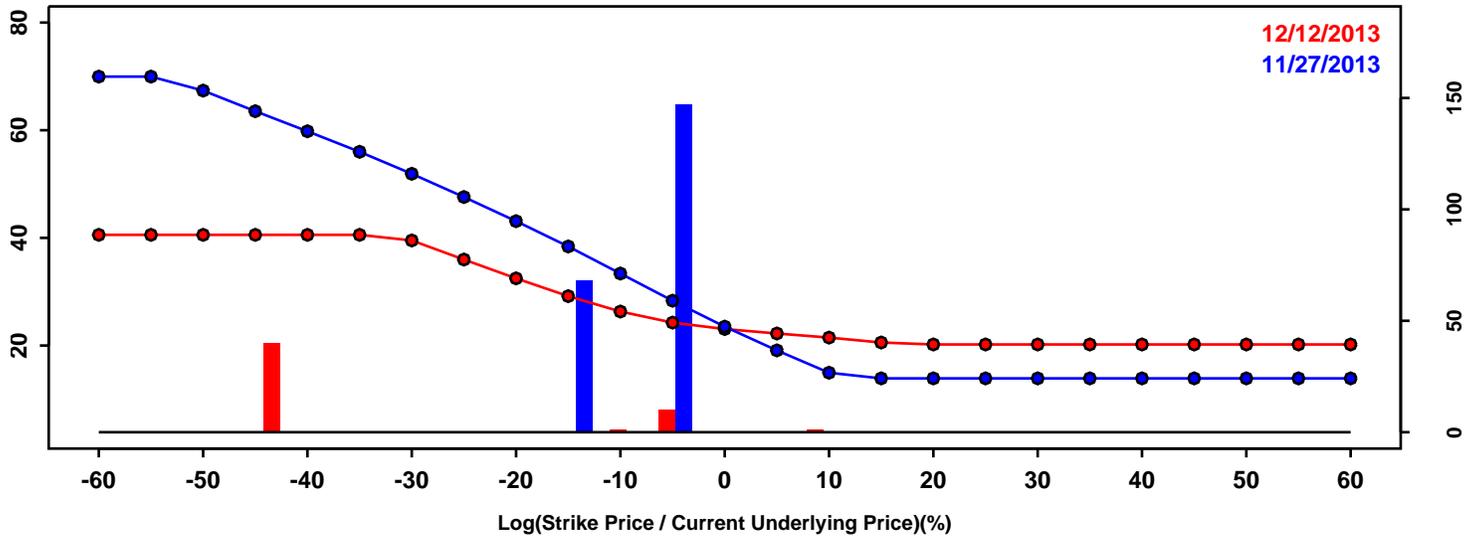
Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-11.67%	-14.11%	-2.44%
50th Pct	4.04%	-0.19%	-4.23%
90th Pct	12.04%	13.28%	1.24%
Mean	0.57%	-0.56%	-1.13%
Std Dev	14.92%	11.45%	-3.47%
Skew	-2.95	-0.65	2.31
Kurtosis	11.54	1.84	-9.70

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- PROGRESSIVE

Log returns are based on the risk neutral density function of the underlying asset derived from options that expire in approximately 3 months.

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution
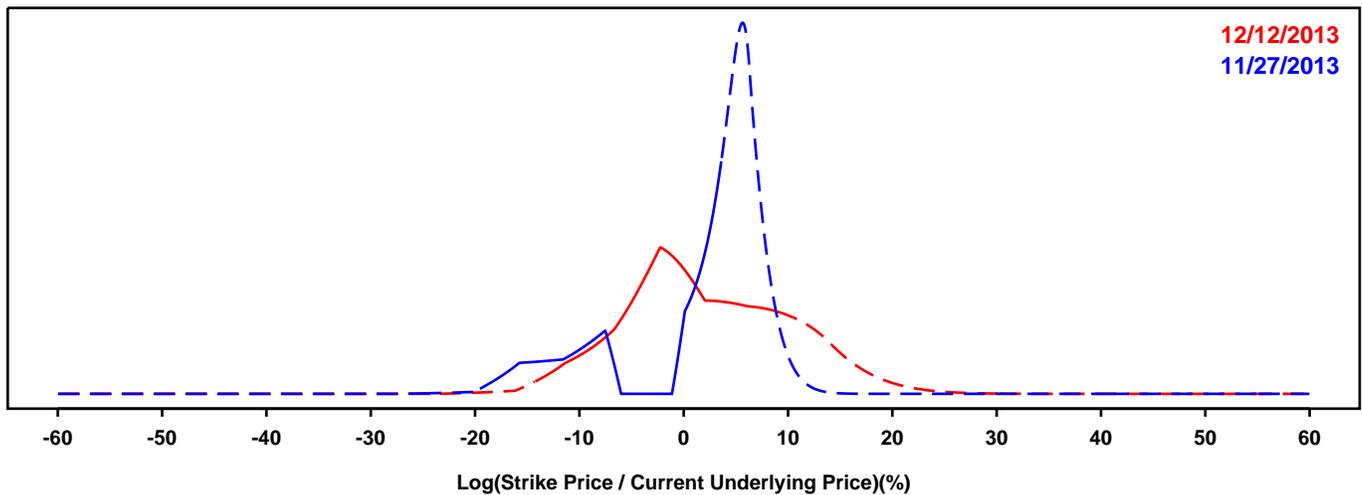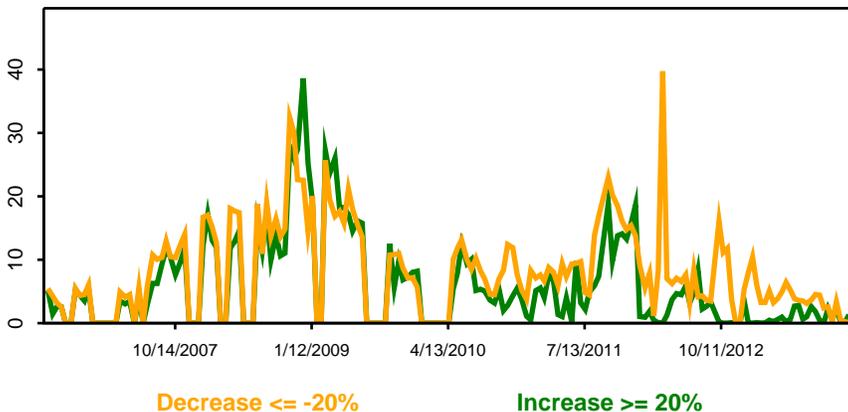

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
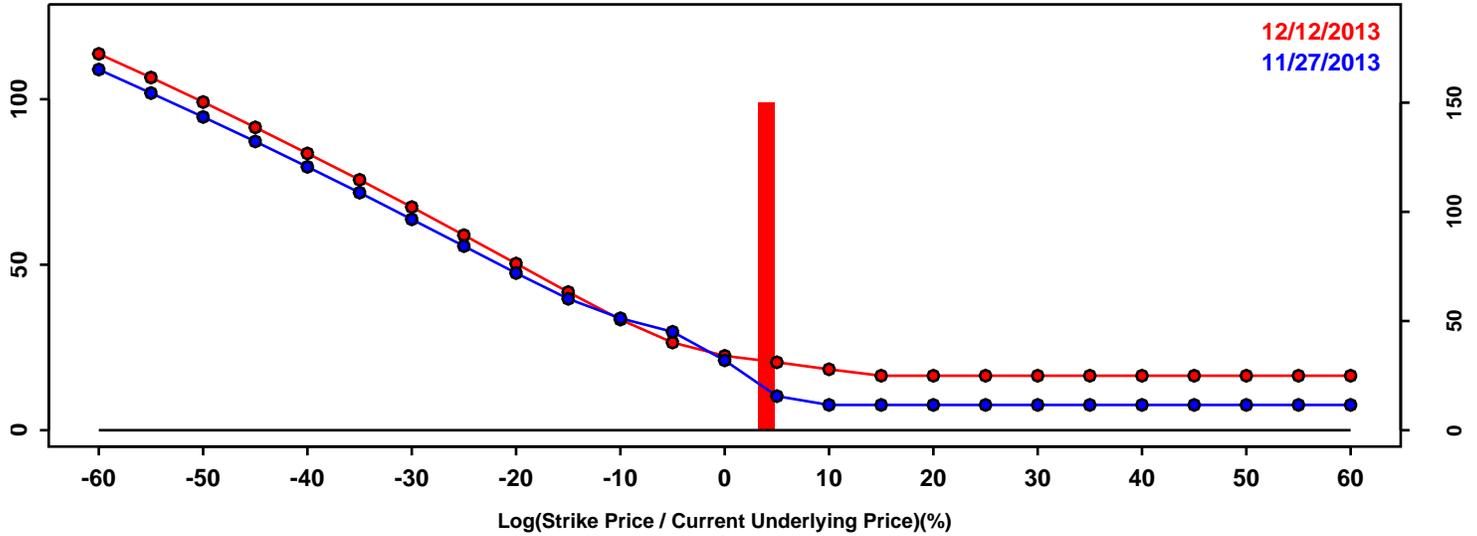
Statistics of the Log Return Distributions

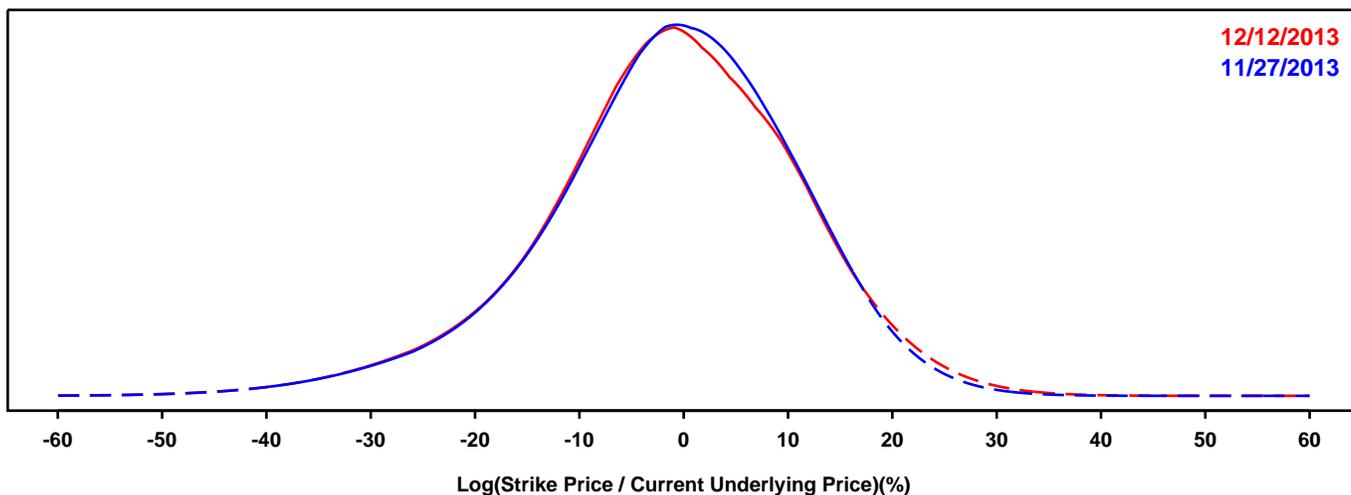|	11/27/2013	12/12/2013	Change
10th Pct	-10.61%	-7.55%	3.06%
50th Pct	4.46%	1.41%	-3.05%
90th Pct	7.71%	13.11%	5.40%
Mean	1.95%	2.32%	0.37%
Std Dev	7.04%	7.97%	0.94%
Skew	-1.44	0.20	1.64
Kurtosis	1.05	-0.34	-1.39

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- PRUDENTIAL

Log returns are based on the risk neutral density function of the underlying asset
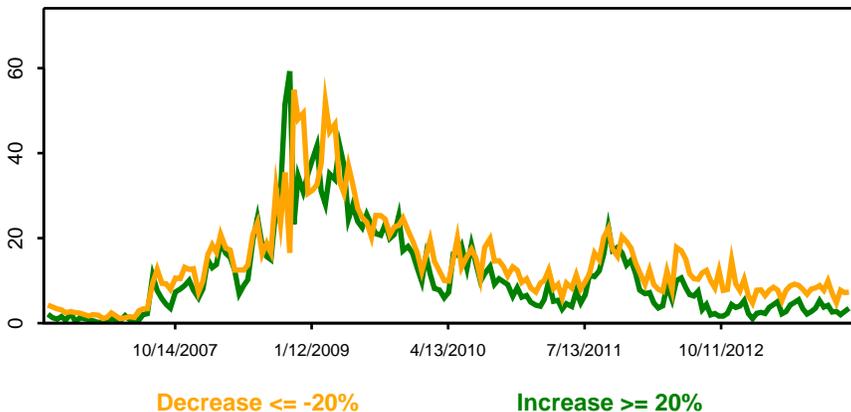*derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
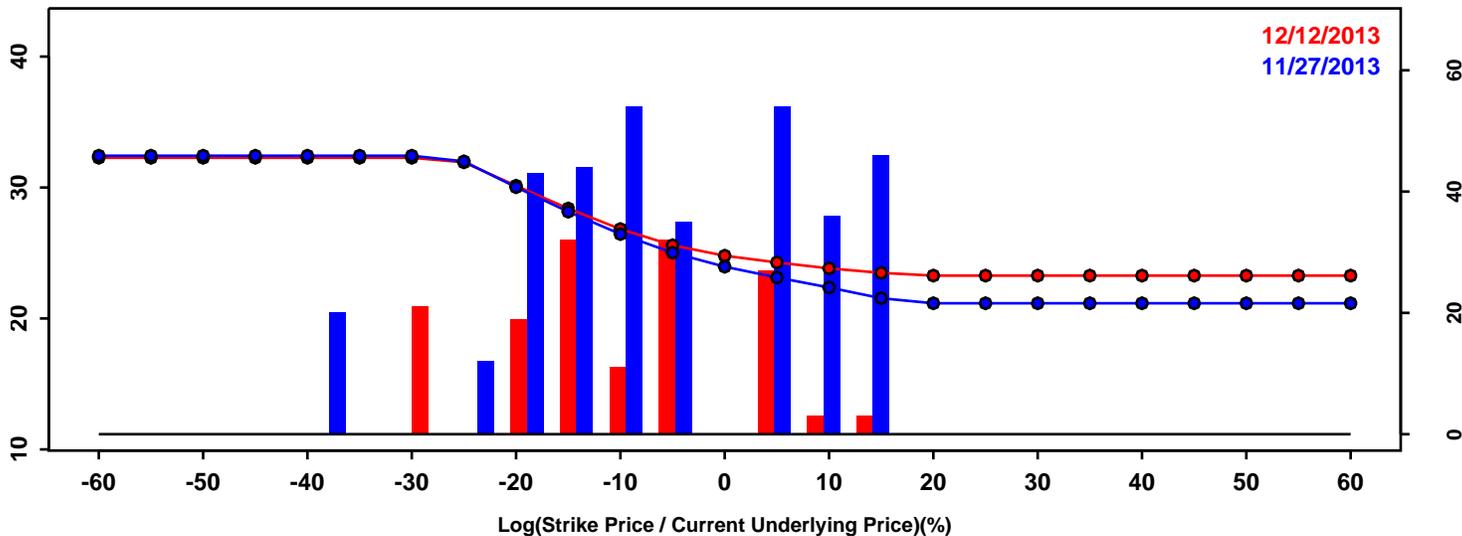
Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-17.01%	-17.12%	-0.11%
50th Pct	-0.51%	-0.72%	-0.21%
90th Pct	13.48%	13.98%	0.50%
Mean	-1.28%	-1.22%	0.06%
Std Dev	12.27%	12.55%	0.28%
Skew	-0.51%	-0.40	0.11
Kurtosis	0.73	0.66	-0.07

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- S&P 500

Log returns are based on the risk neutral density function of the underlying asset derived from options that expire in approximately 6 months.

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

Risk Neutral PDF of the Log Return Distribution

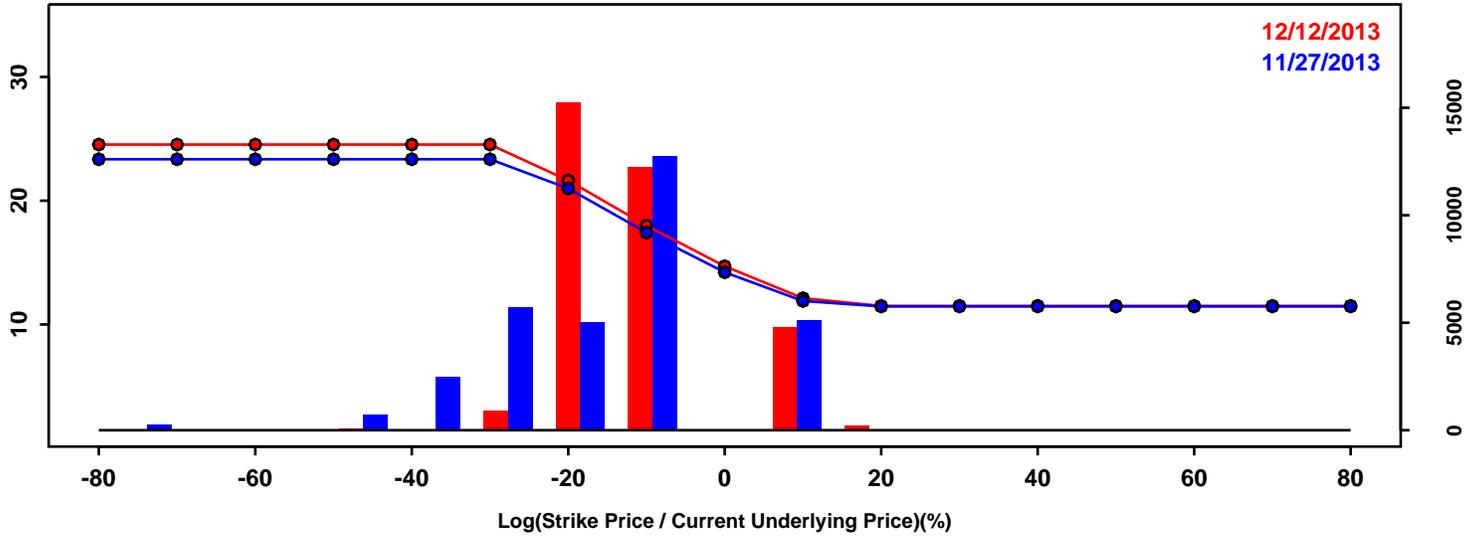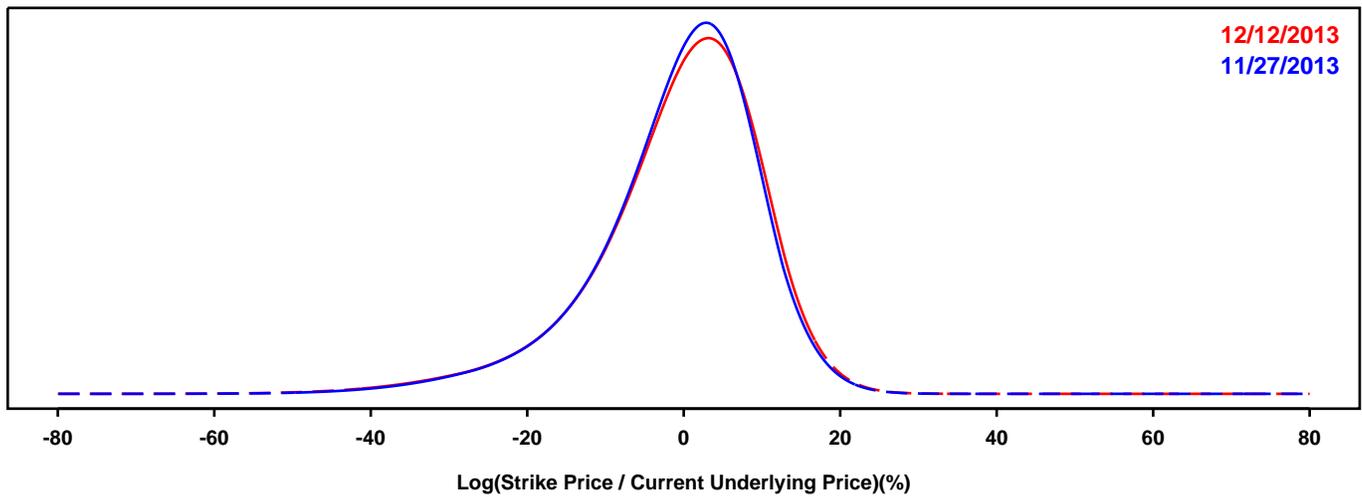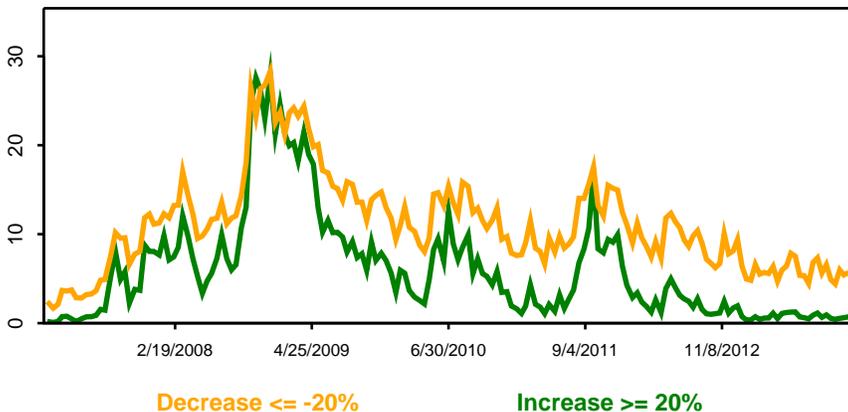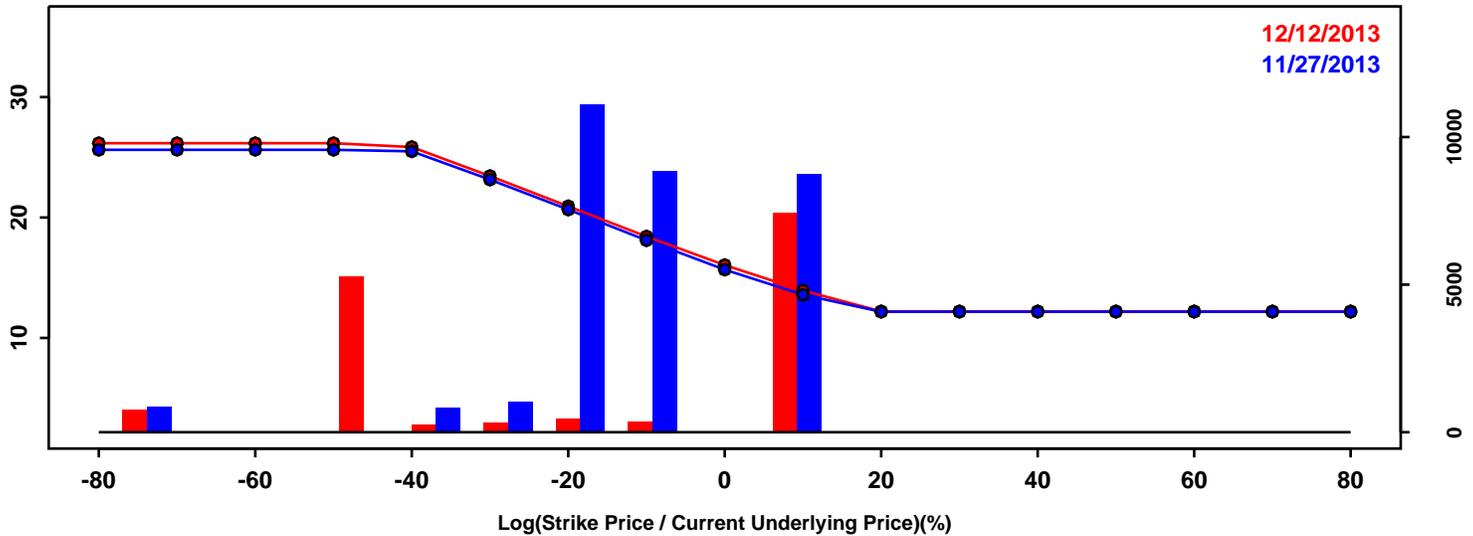

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**

Statistics of the Log Return Distributions

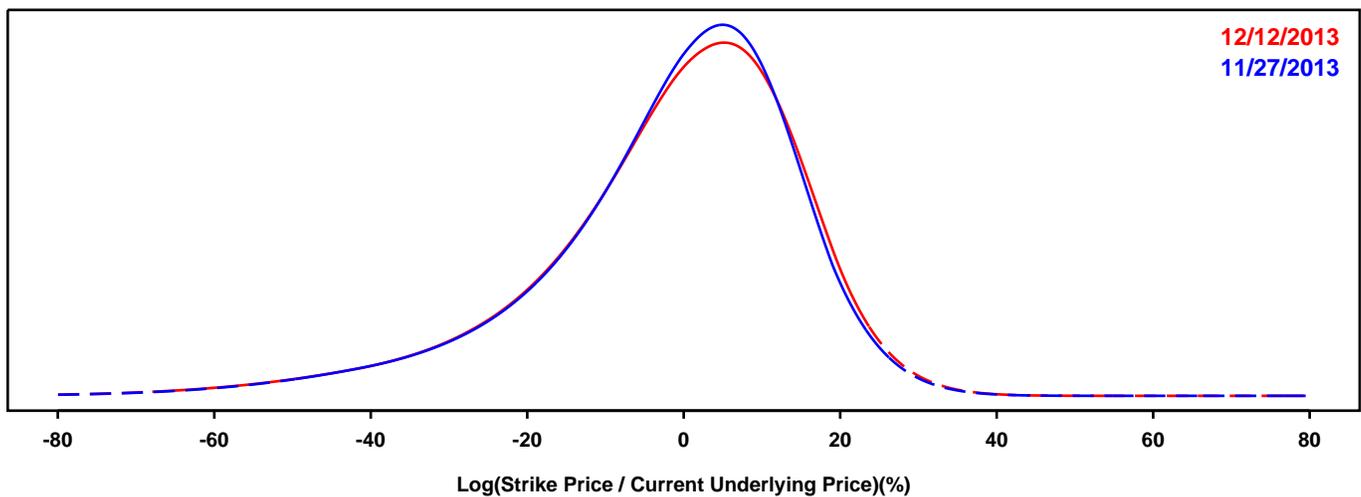|	11/27/2013	12/12/2013	Change
10th Pct	-14.41%	-14.67%	-0.26%
50th Pct	0.67%	0.83%	0.16%
90th Pct	10.68%	11.17%	0.49%
Mean	-0.85%	-0.72%	0.13%
Std Dev	10.54%	10.88%	0.34%
Skew	-0.98	-1.02	-0.03
Kurtosis	1.83	1.93	0.10

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- S&P 500

Log returns are based on the risk neutral density function of the underlying asset derived from options that expire in approximately 12 months.
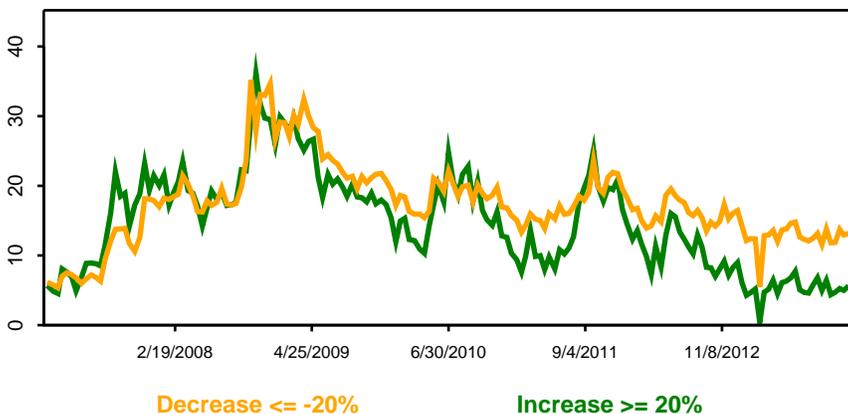
Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   Increase >= 20%

Statistics of the Log Return Distributions

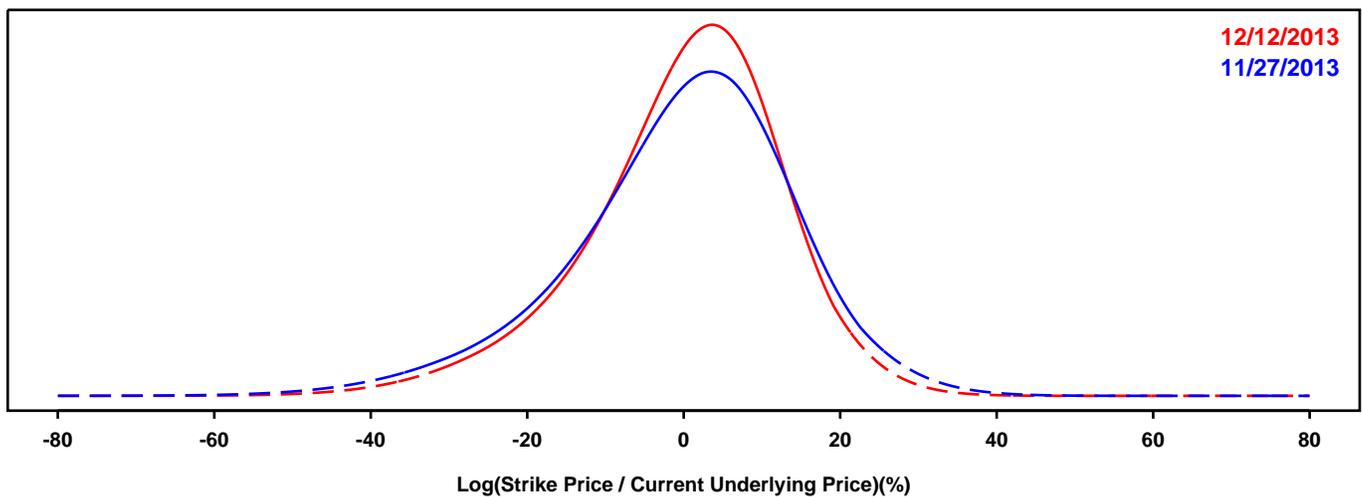|	11/27/2013	12/12/2013	Change
10th Pct	-23.93%	-24.19%	-0.26%
50th Pct	0.86%	0.97%	0.11%
90th Pct	16.00%	16.70%	0.70%
Mean	-1.93%	-1.80%	0.13%
Std Dev	16.77%	17.10%	0.33%
Skew	-1.07	-1.05	0.02
Kurtosis	1.88	1.83	-0.06

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CRUDE OIL FUTURES (WTI)

Log returns are based on the risk neutral density function of the underlying asset derived from options that expire in approximately 6 months.

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
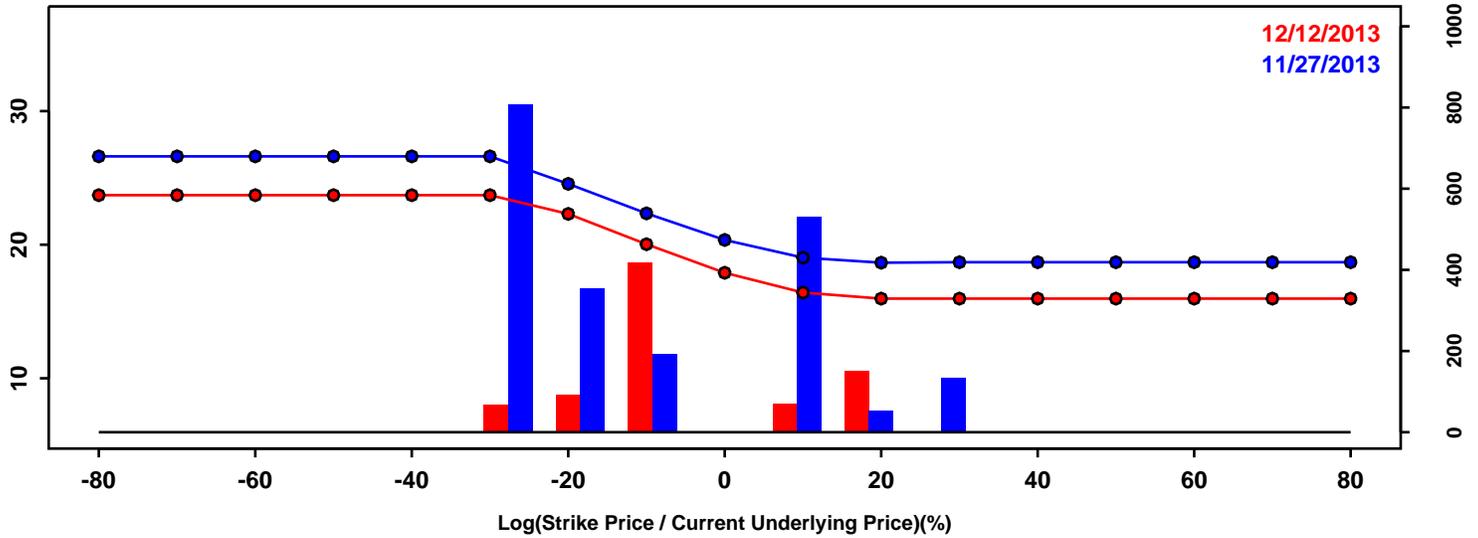
Statistics of the Log Return Distributions

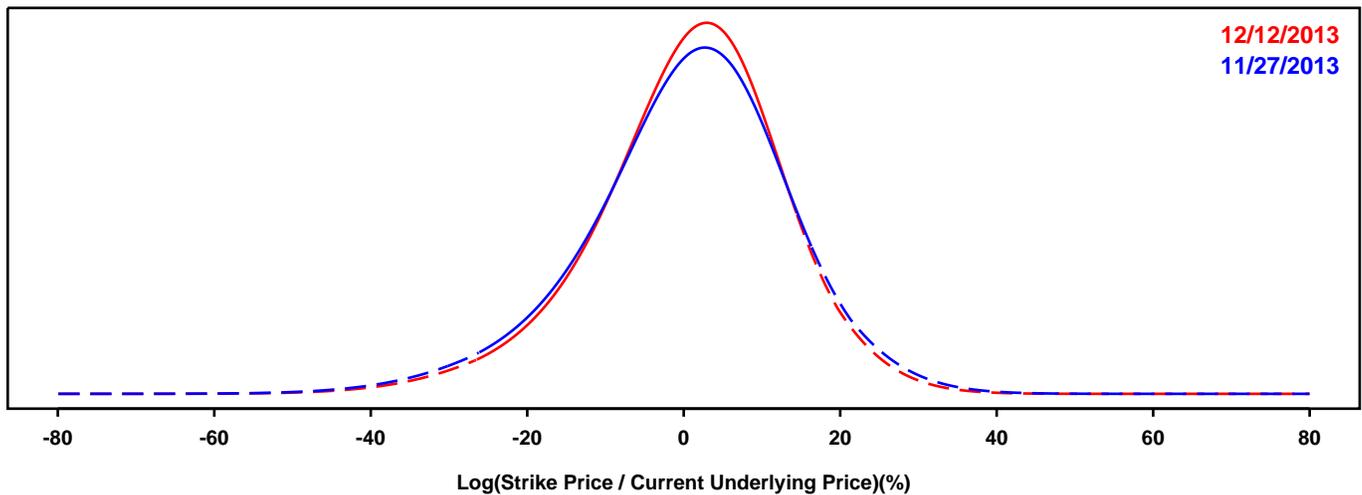|	11/27/2013	12/12/2013	Change
10th Pct	-19.26%	-16.74%	2.52%
50th Pct	1.22%	1.39%	0.18%
90th Pct	16.73%	14.84%	-1.89%
Mean	-0.16%	0.10%	0.26%
Std Dev	14.53%	12.75%	-1.78%
Skew	-0.54	-0.59	-0.05
Kurtosis	0.74	0.79	0.05

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CRUDE OIL FUTURES (Brent)

*Log returns are based on the risk neutral density function of the underlying asset
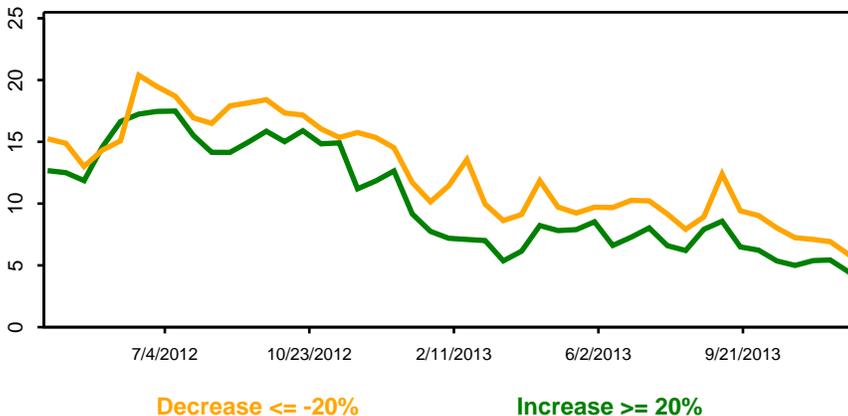derived from options that expire in approximately 6 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
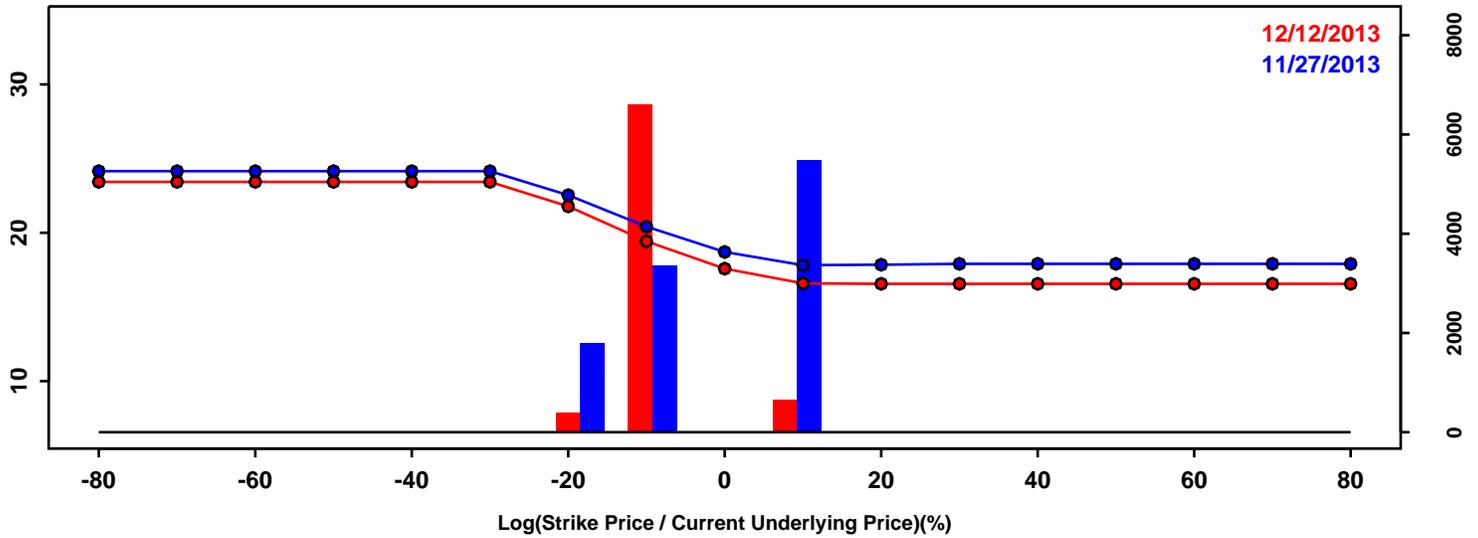
Statistics of the Log Return Distributions

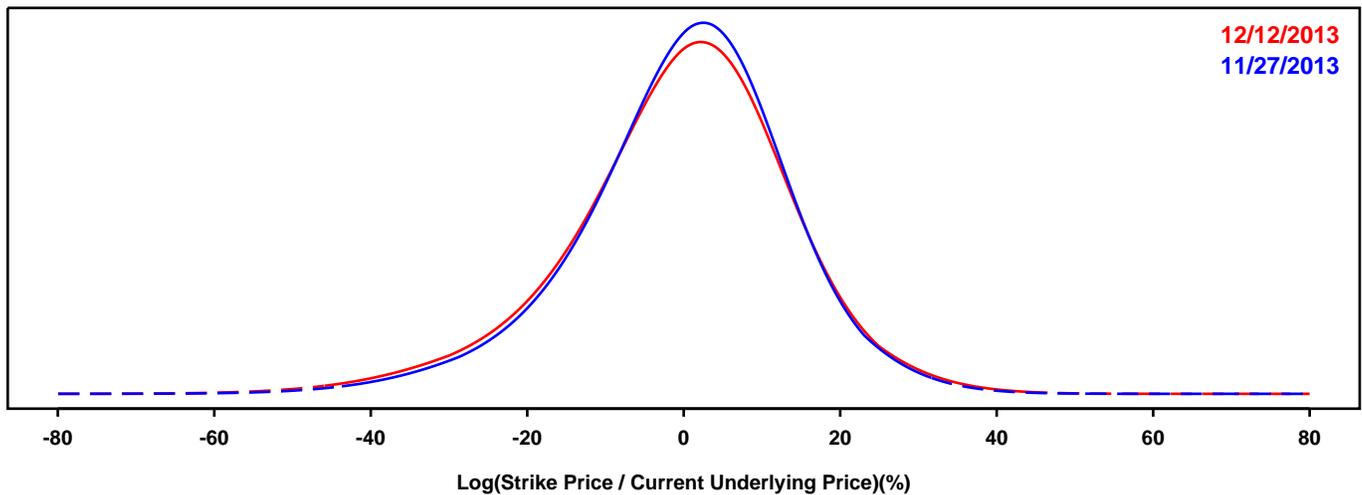|	11/27/2013	12/12/2013	Change
10th Pct	-16.50%	-15.22%	1.28%
50th Pct	1.33%	1.49%	0.16%
90th Pct	16.08%	15.24%	-0.84%
Mean	0.47%	0.64%	0.16%
Std Dev	13.18%	12.35%	-0.83%
Skew	-0.42	-0.46	-0.04
Kurtosis	0.70	0.79	0.09

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- GOLD FUTURES

*Log returns are based on the risk neutral density function of the underlying asset
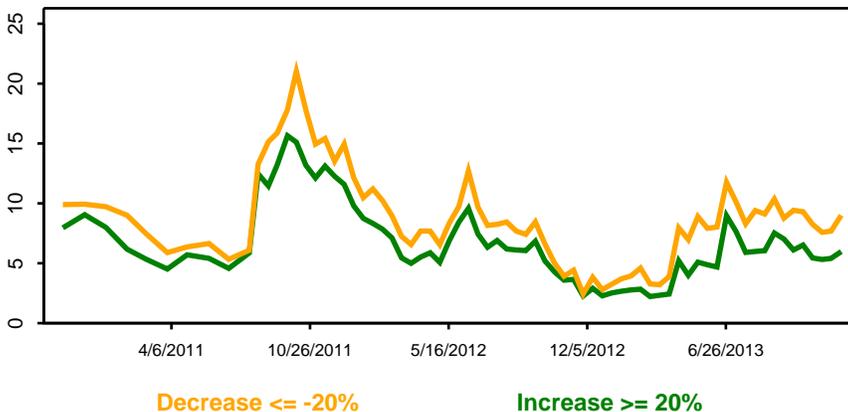derived from options that expire in approximately 6 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
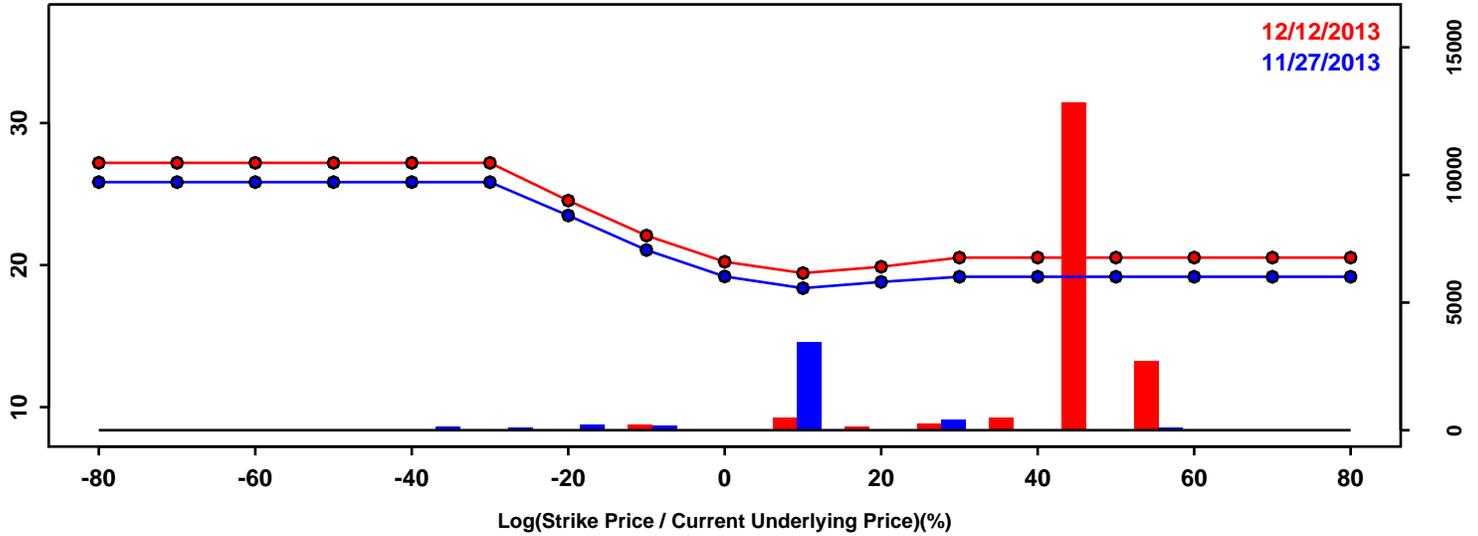
Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-17.34%	-18.90%	-1.56%
50th Pct	0.99%	0.61%	-0.38%
90th Pct	15.93%	16.36%	0.43%
Mean	0.02%	-0.45%	-0.46%
Std Dev	13.60%	14.43%	0.83%
Skew	-0.46%	-0.47%	-0.01%
Kurtosis	0.90	0.92	0.02

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- SILVER FUTURES

*Log returns are based on the risk neutral density function of the underlying asset
derived from options that expire in approximately 6 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

Risk Neutral PDF of the Log Return Distribution
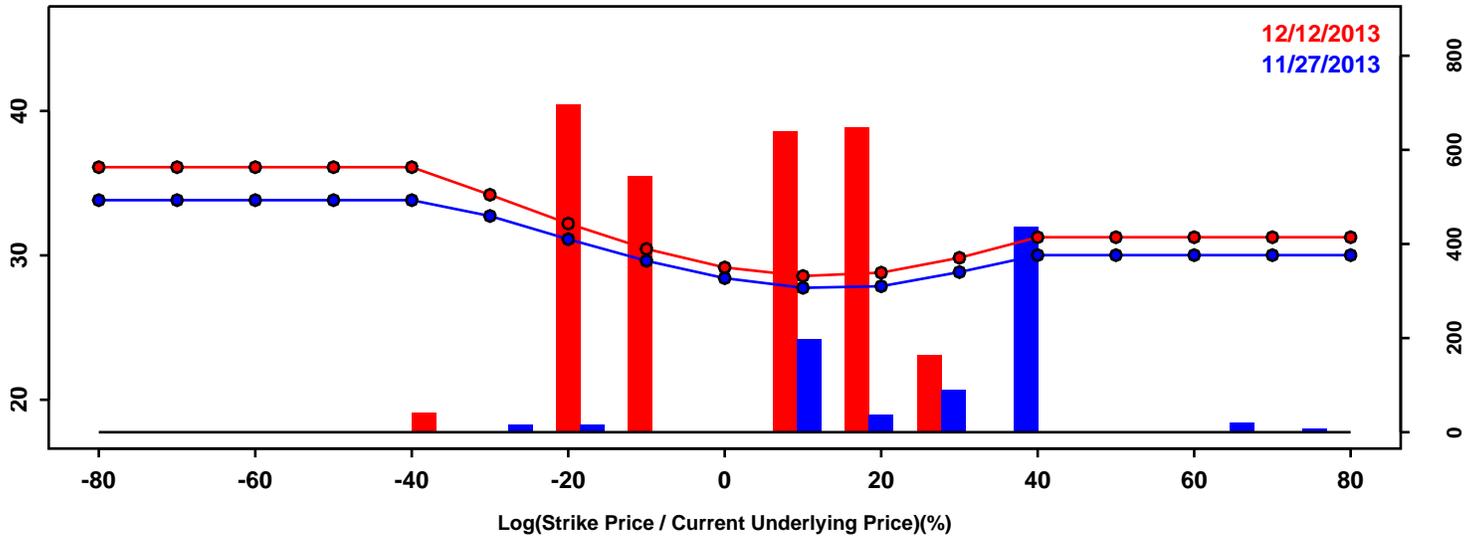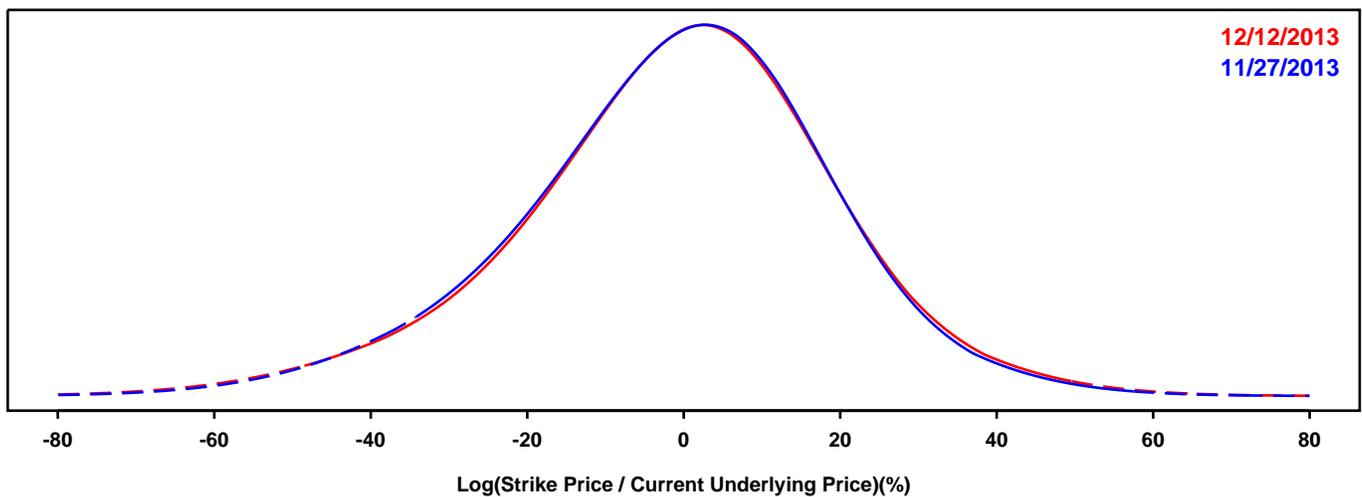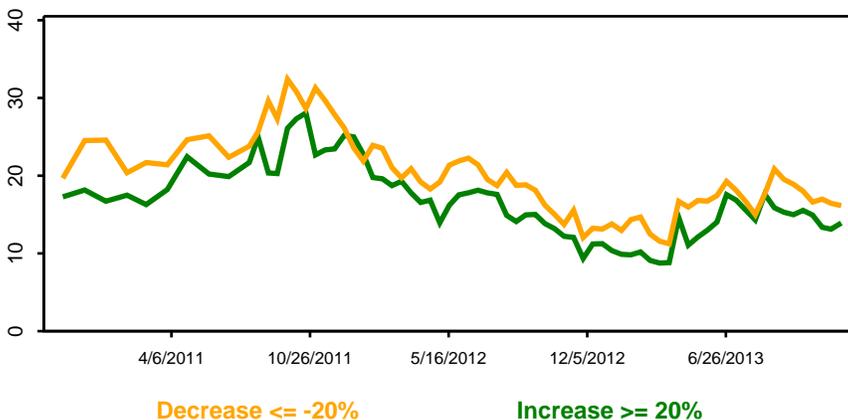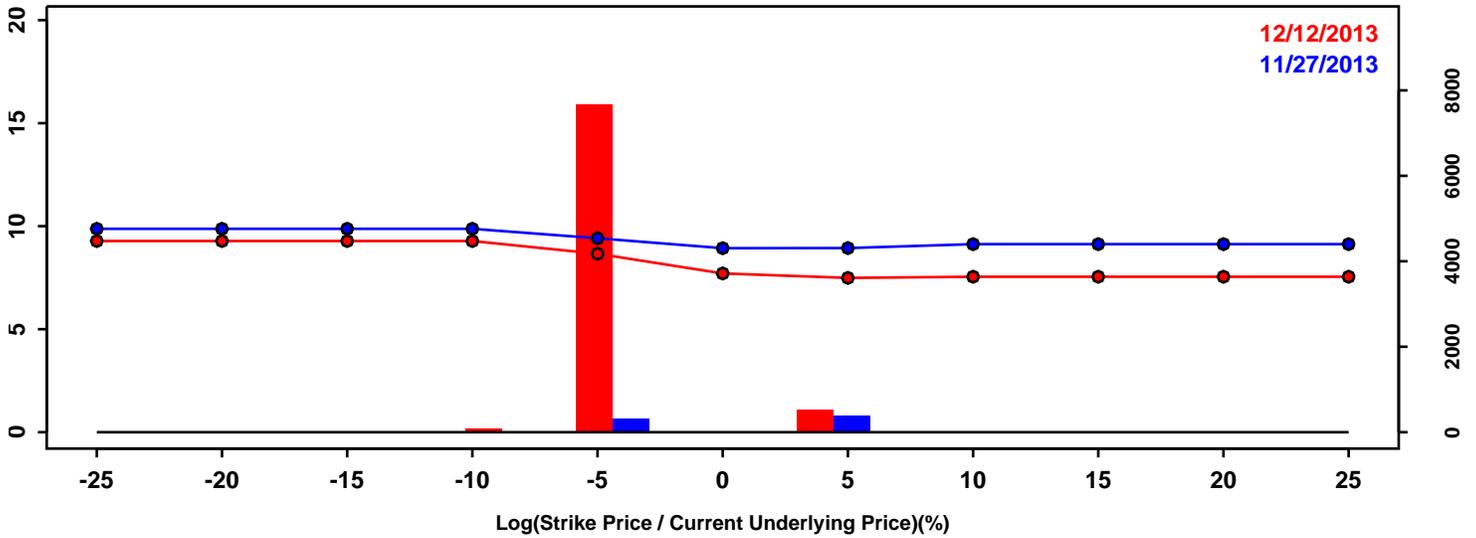

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**

Statistics of the Log Return Distributions

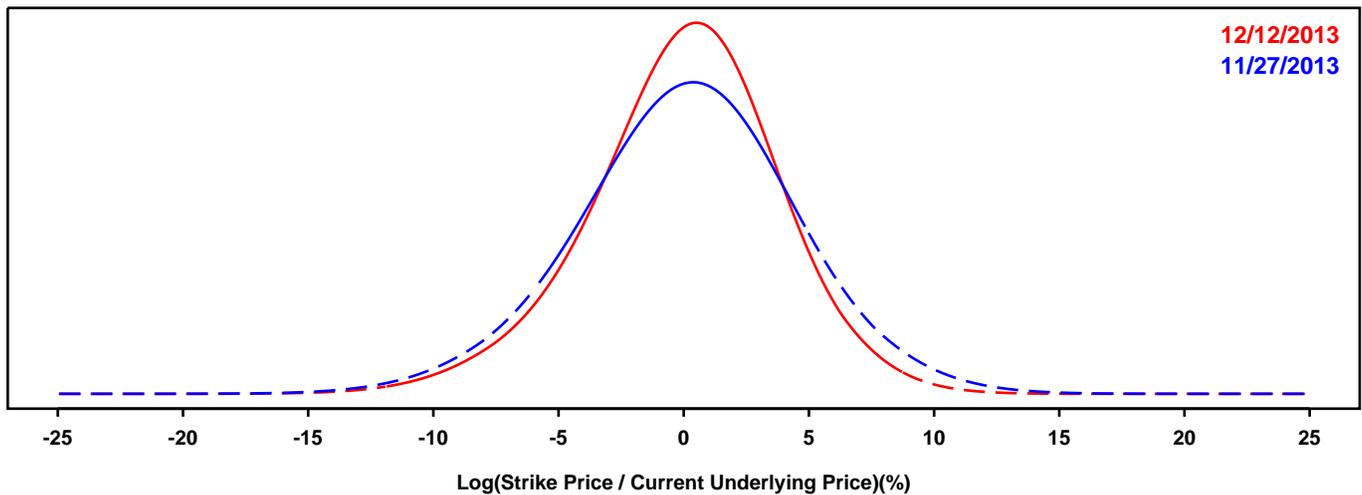|	11/27/2013	12/12/2013	Change
10th Pct	-27.38%	-27.30%	0.08%
50th Pct	0.15%	0.42%	0.27%
90th Pct	22.94%	23.79%	0.84%
Mean	-1.08%	-0.76%	0.32%
Std Dev	20.19%	20.69%	0.50%
Skew	-0.29	-0.31	-0.01
Kurtosis	0.51	0.68	0.17

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- DOLLAR-EURO EXCHANGE RATE FUTURES

Log returns are based on the risk neutral density function of the underlying asset
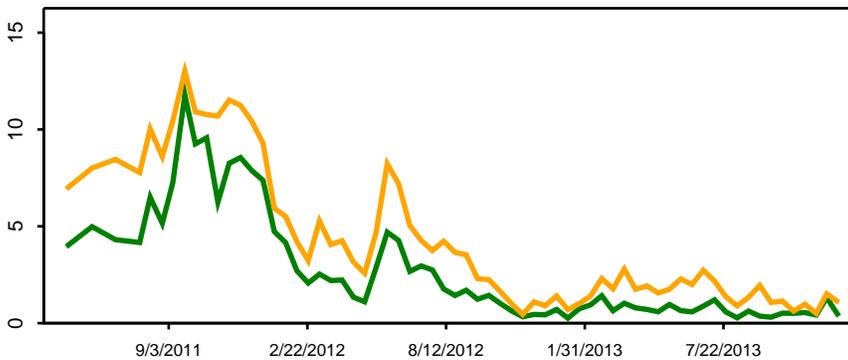*derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -10% [stronger $]   **Increase >= 10% [weaker $]**

Statistics of the Log Return Distributions

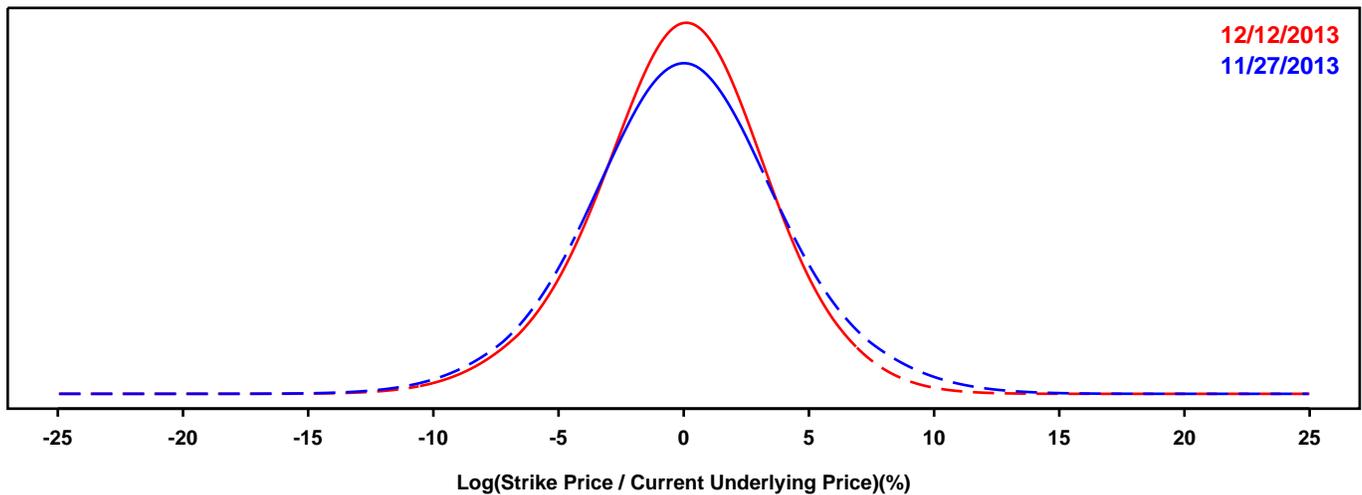|	11/27/2013	12/12/2013	Change
10th Pct	-5.56%	-4.95%	0.61%
50th Pct	0.29%	0.19%	-0.10%
90th Pct	5.75%	4.68%	-1.07%
Mean	0.21%	0.02%	-0.19%
Std Dev	4.45%	3.86%	-0.59%
Skew	-0.10	-0.28	-0.18
Kurtosis	0.26	0.45	0.19

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- DOLLAR-POUND EXCHANGE RATE FUTURES

Log returns are based on the risk neutral density function of the underlying asset
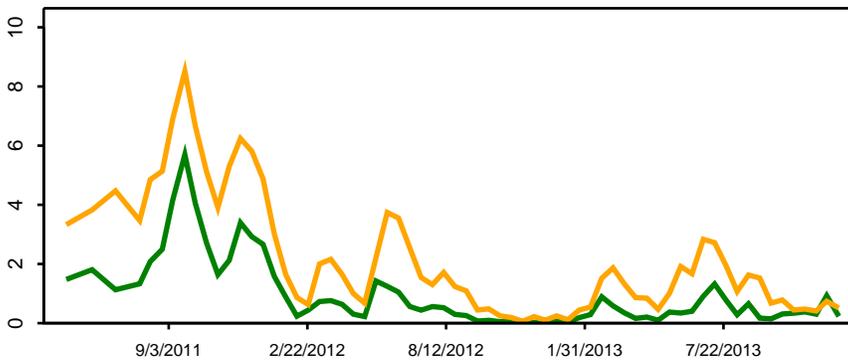*derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)
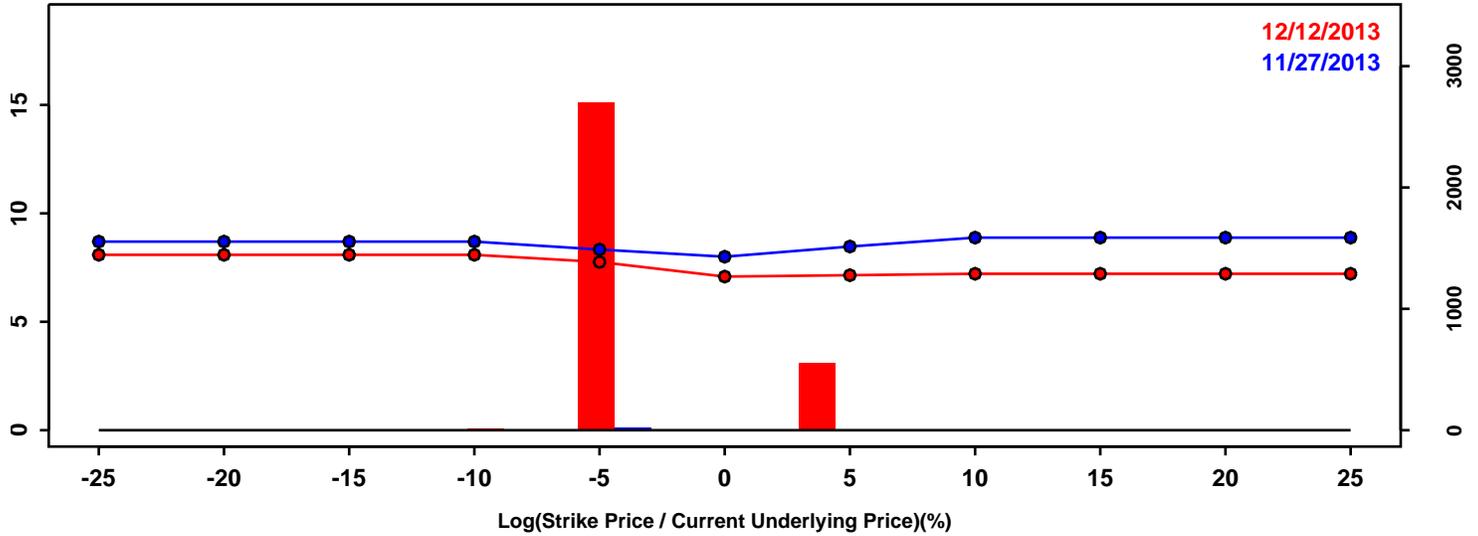
Probability of a Large Change

Decrease <= -10% [stronger $]   **Increase >= 10% [weaker $]**

Statistics of the Log Return Distributions

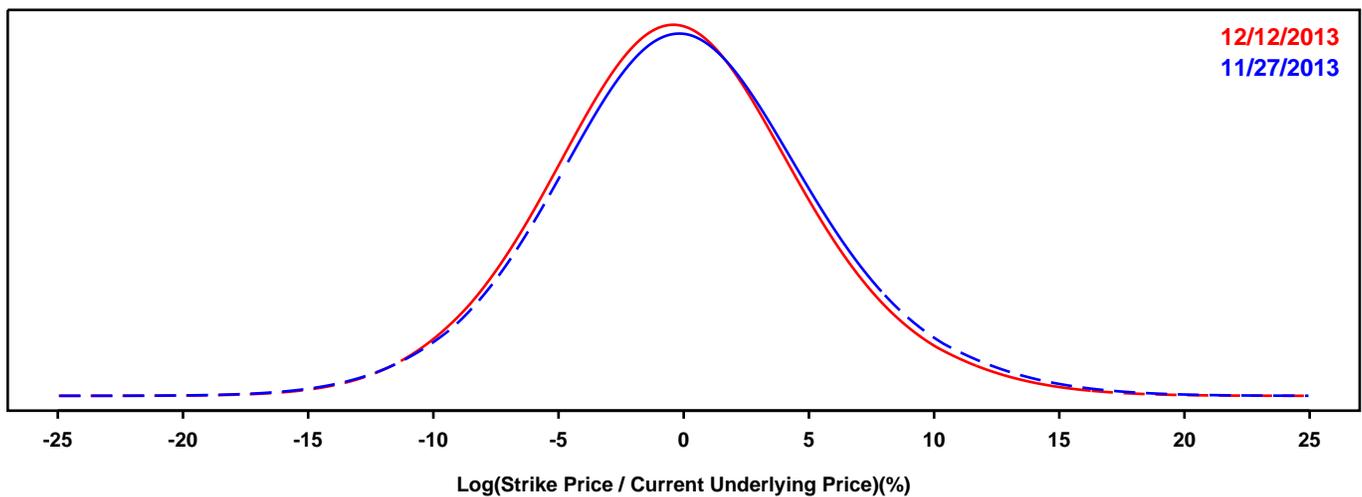|	11/27/2013	12/12/2013	Change
10th Pct	-4.84%	-4.56%	0.28%
50th Pct	0.00%	0.00%	-0.00%
90th Pct	5.06%	4.33%	-0.73%
Mean	0.14%	-0.04%	-0.18%
Std Dev	3.99%	3.54%	-0.45%
Skew	0.04	-0.14	-0.18
Kurtosis	0.38	0.34	-0.04

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- DOLLAR-YEN EXCHANGE RATE FUTURES

Log returns are based on the risk neutral density function of the underlying asset
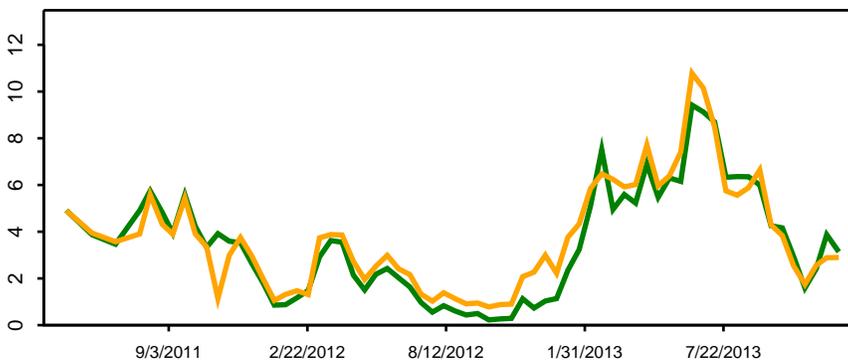*derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

9/3/2011   2/22/2012   8/12/2012   1/31/2013   7/22/2013
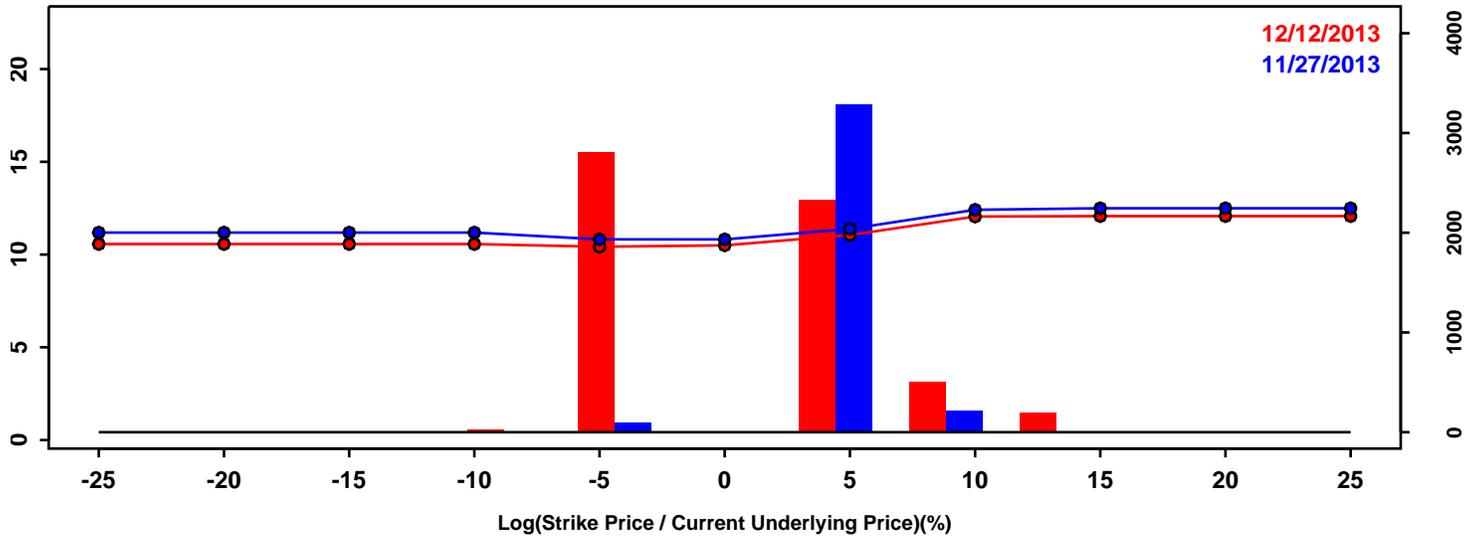
Decrease <= -10% [stronger $]   **Increase >= 10% [weaker $]**

Statistics of the Log Return Distributions

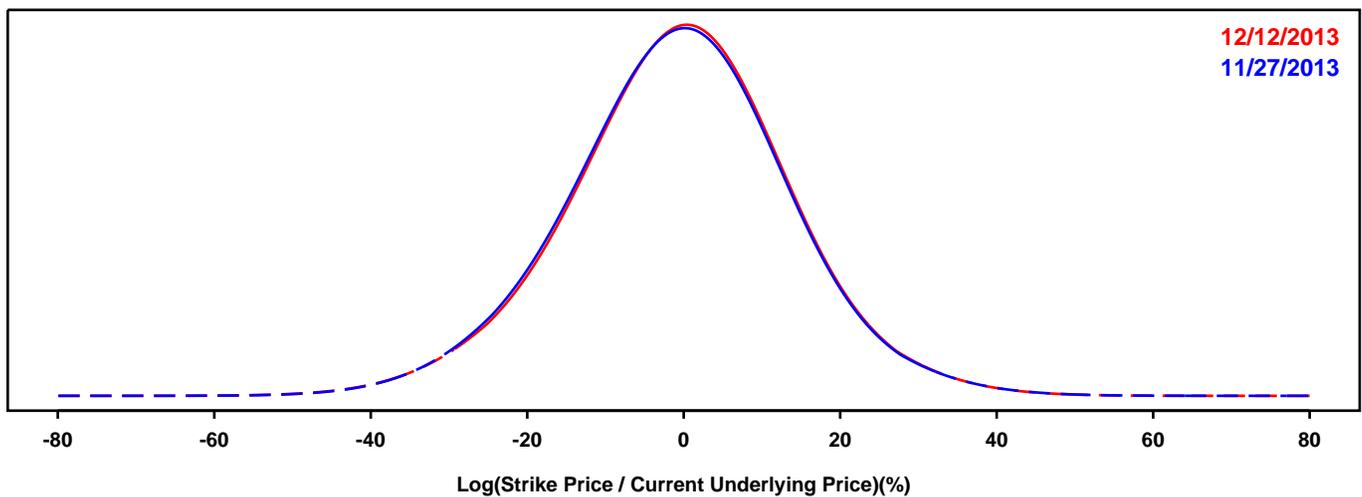|	11/27/2013	12/12/2013	Change
10th Pct	-6.57%	-6.75%	-0.18%
50th Pct	0.00%	-0.28%	-0.28%
90th Pct	7.00%	6.43%	-0.57%
Mean	0.17%	-0.18%	-0.35%
Std Dev	5.40%	5.23%	-0.17%
Skew	0.14	0.14	-0.00
Kurtosis	0.38	0.33	-0.06

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- CORN FUTURES

Log returns are based on the risk neutral density function of the underlying asset
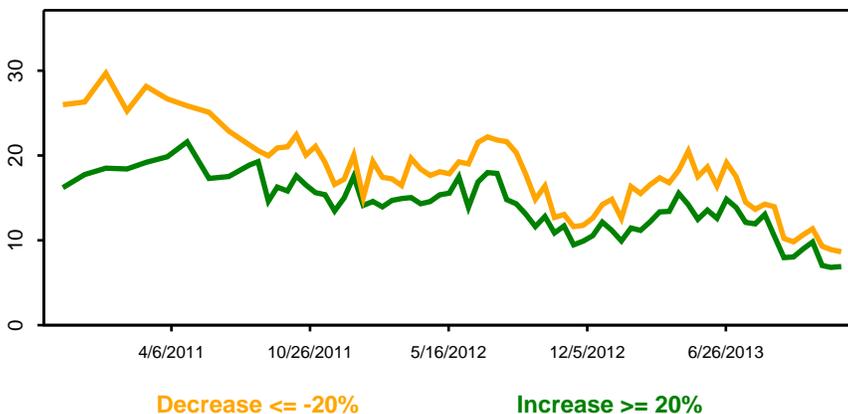*derived from options that expire in approximately 6 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   Increase >= 20%
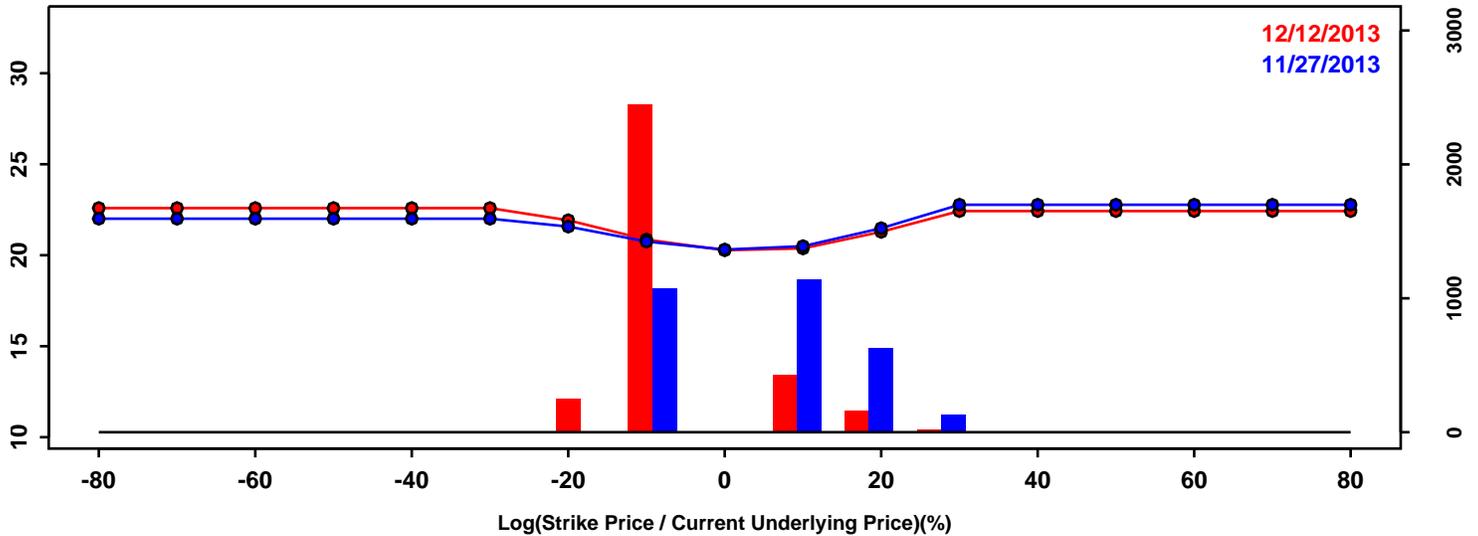
Statistics of the Log Return Distributions

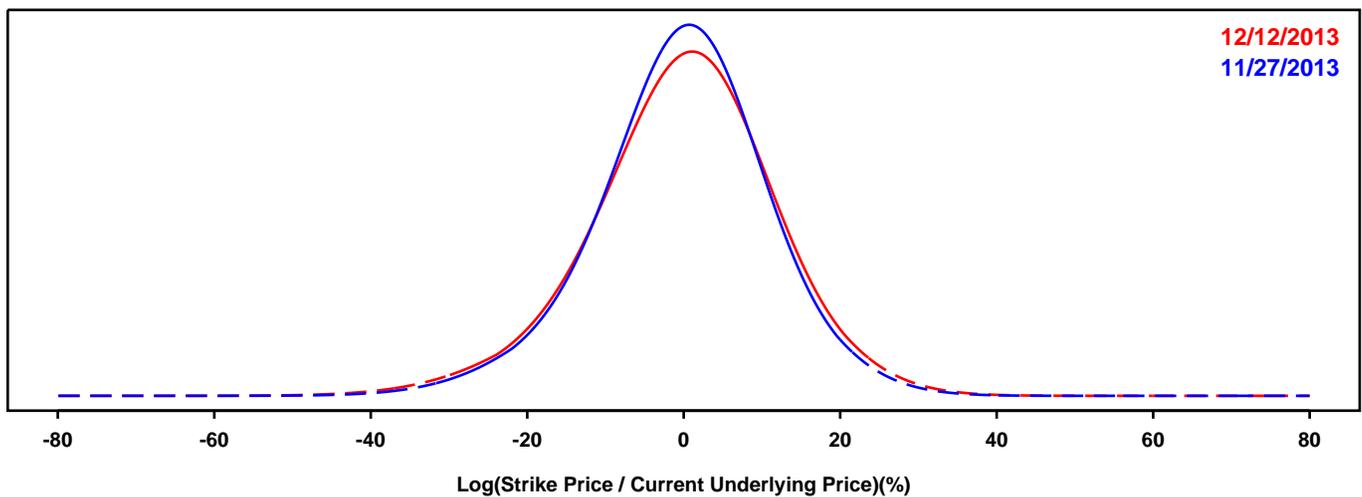|	11/27/2013	12/12/2013	Change
10th Pct	-18.95%	-18.70%	0.25%
50th Pct	-0.49%	-0.26%	0.23%
90th Pct	16.89%	17.06%	0.17%
Mean	-0.73%	-0.52%	0.21%
Std Dev	14.31%	14.30%	-0.02%
Skew	-0.05	-0.08	-0.04
Kurtosis	0.37	0.41	0.04

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- SOYBEAN FUTURES

Log returns are based on the risk neutral density function of the underlying asset
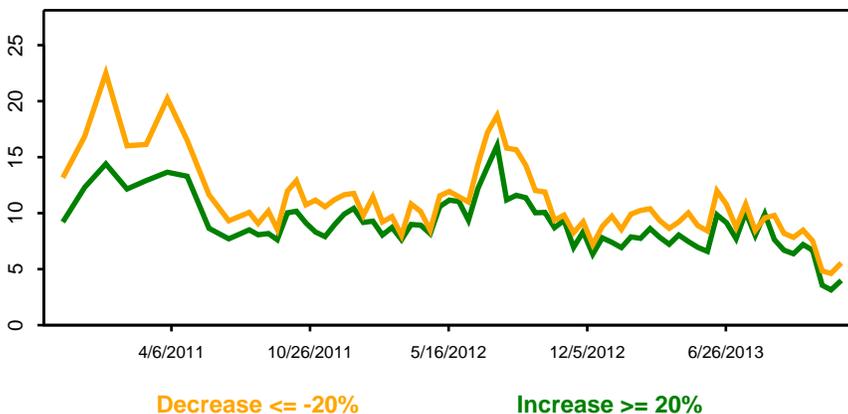*derived from options that expire in approximately 6 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
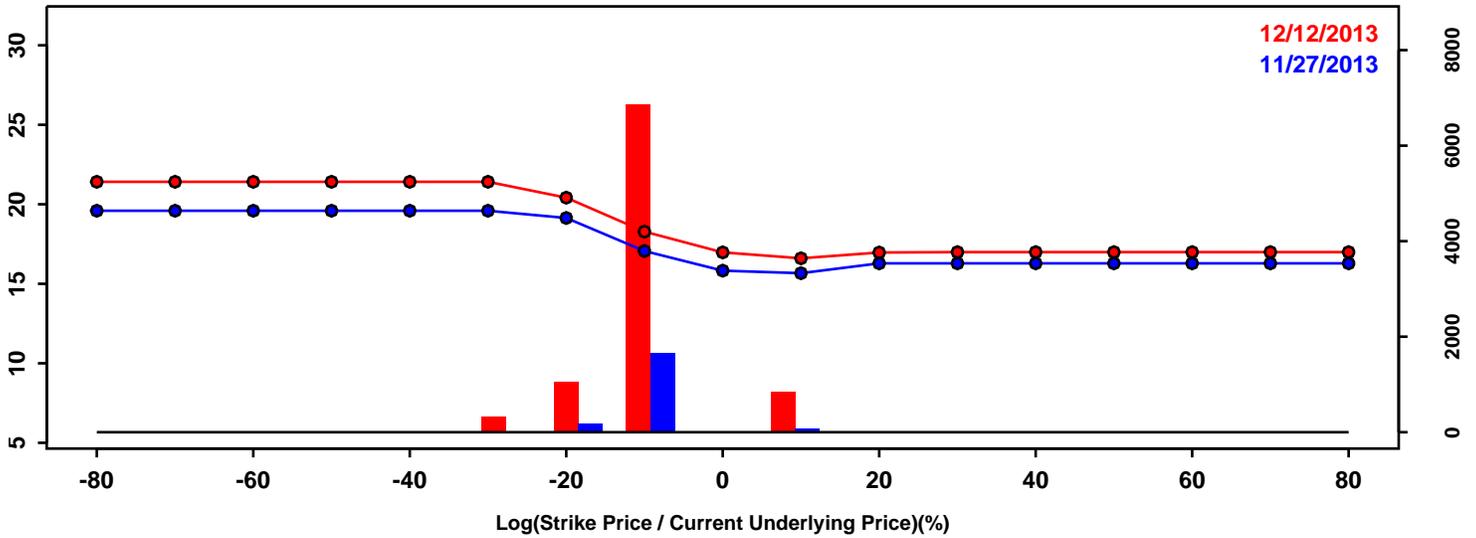
Statistics of the Log Return Distributions

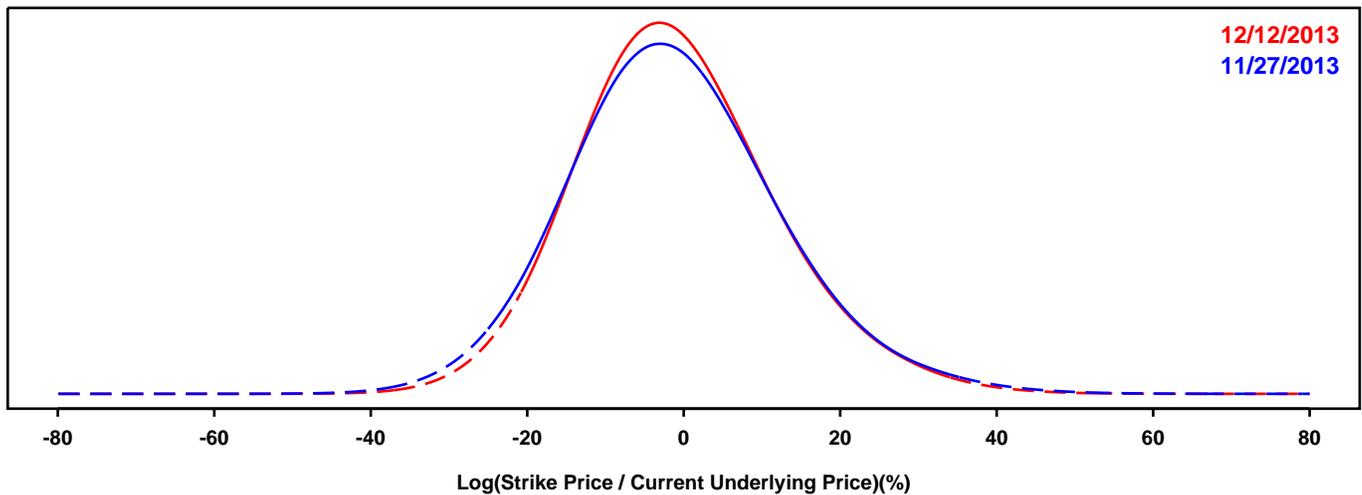|	11/27/2013	12/12/2013	Change
10th Pct	-14.31%	-15.33%	-1.02%
50th Pct	0.15%	0.37%	0.22%
90th Pct	13.37%	14.42%	1.06%
Mean	-0.22%	-0.13%	0.09%
Std Dev	11.18%	12.00%	0.82%
Skew	-0.25	-0.29	-0.04
Kurtosis	0.60	0.61	0.01

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- WHEAT FUTURES

*Log returns are based on the risk neutral density function of the underlying asset
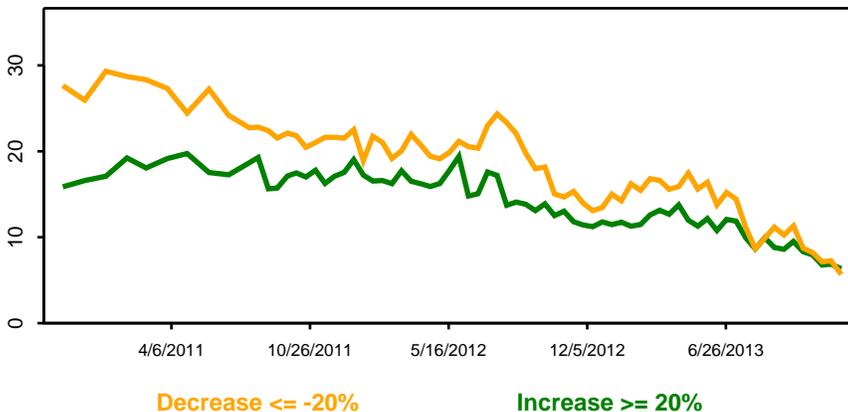derived from options that expire in approximately 6 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -20%   **Increase >= 20%**
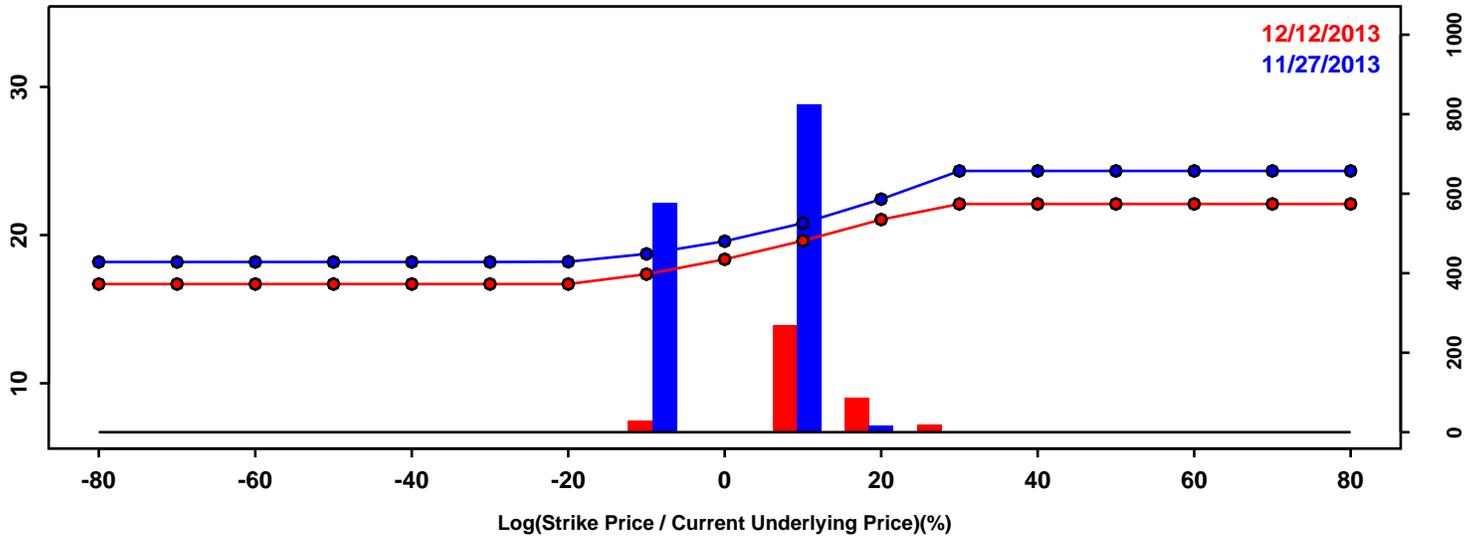
Statistics of the Log Return Distributions

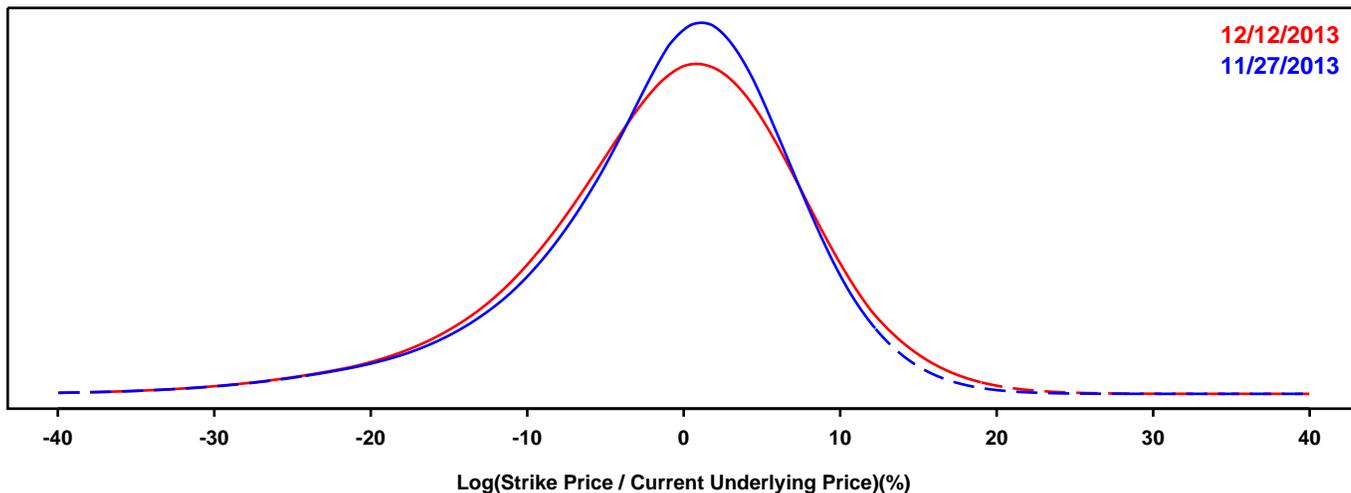|	11/27/2013	12/12/2013	Change
10th Pct	-17.85%	-16.58%	1.26%
50th Pct	-1.74%	-1.62%	0.12%
90th Pct	16.64%	16.11%	-0.53%
Mean	-1.01%	-0.78%	0.23%
Std Dev	13.75%	12.95%	-0.80%
Skew	0.32	0.35	0.03
Kurtosis	0.43	0.34	-0.08

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- iSHARES DOW JONES US REAL ESTATE

*Log returns are based on the risk neutral density function of the underlying asset
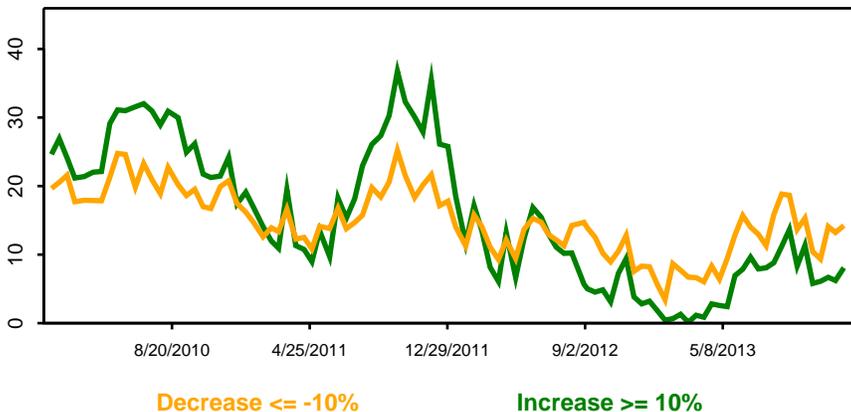derived from options that expire in approximately 3 months.*

Implied Volatilities (lines--left axis) and Volume (bars--right axis)

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Risk Neutral PDF of the Log Return Distribution

12/12/2013
11/27/2013

Log(Strike Price / Current Underlying Price)(%)

Probability of a Large Change

Decrease <= -10%   **Increase >= 10%**
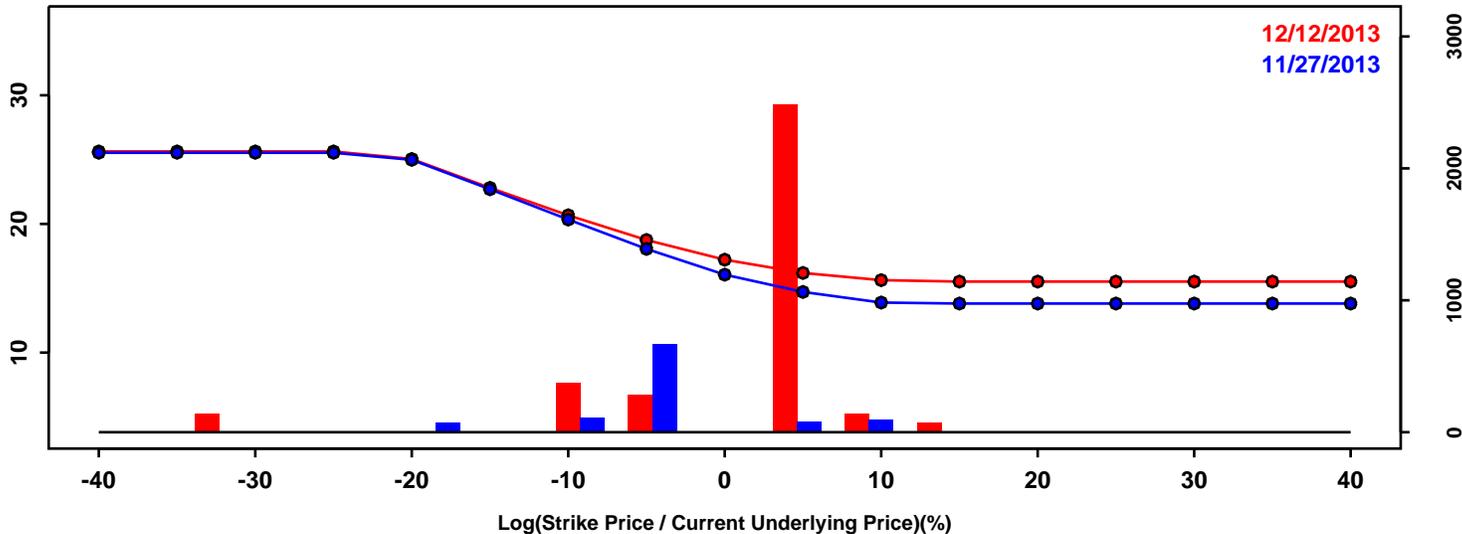
Statistics of the Log Return Distributions

	11/27/2013	12/12/2013	Change
10th Pct	-12.02%	-12.50%	-0.48%
50th Pct	-0.04%	-0.25%	-0.22%
90th Pct	8.34%	9.14%	0.80%
Mean	-1.10%	-1.10%	0.00%
Std Dev	8.45%	8.89%	0.44%
Skew	-0.88	-0.68	0.20
Kurtosis	1.60	1.19	-0.42

RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- Inflation Caps & Floors

Probabilty of Deflation and High Inflation over the next 12 Months
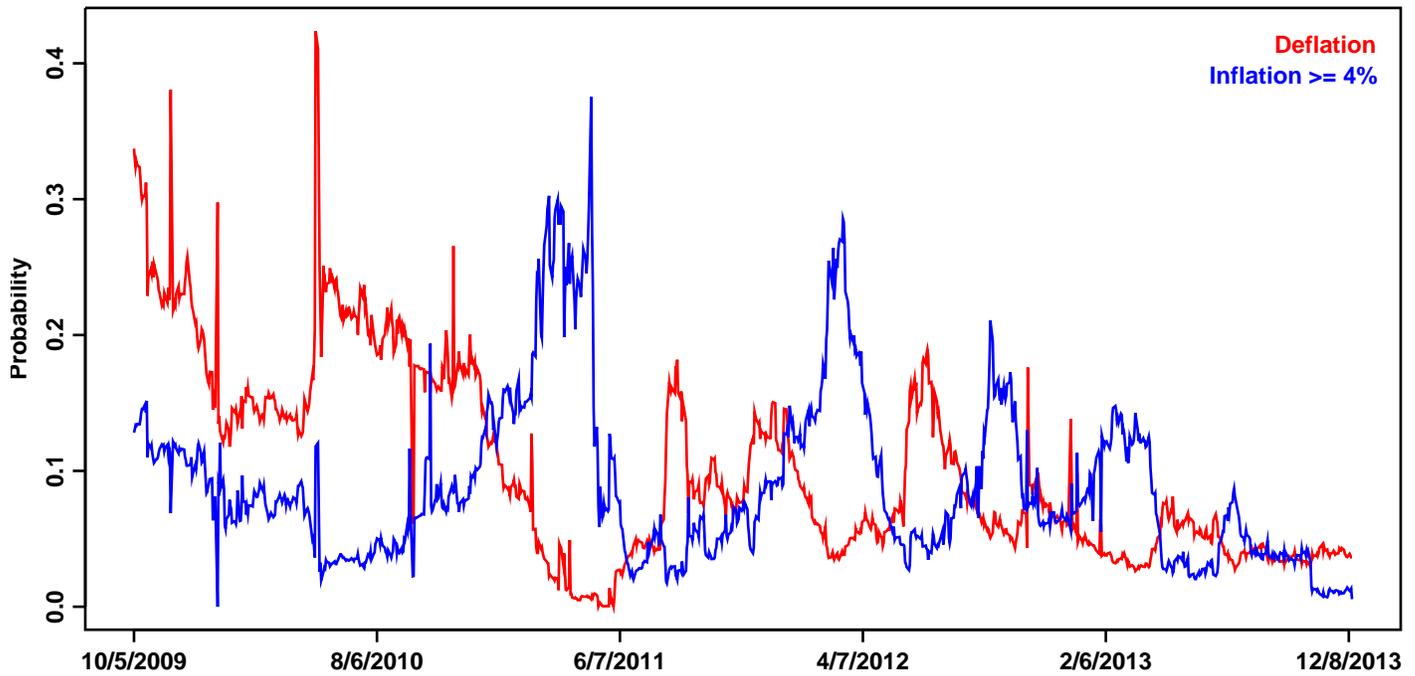
Risk Neutral Density Function for Inflation over the next 12 Months
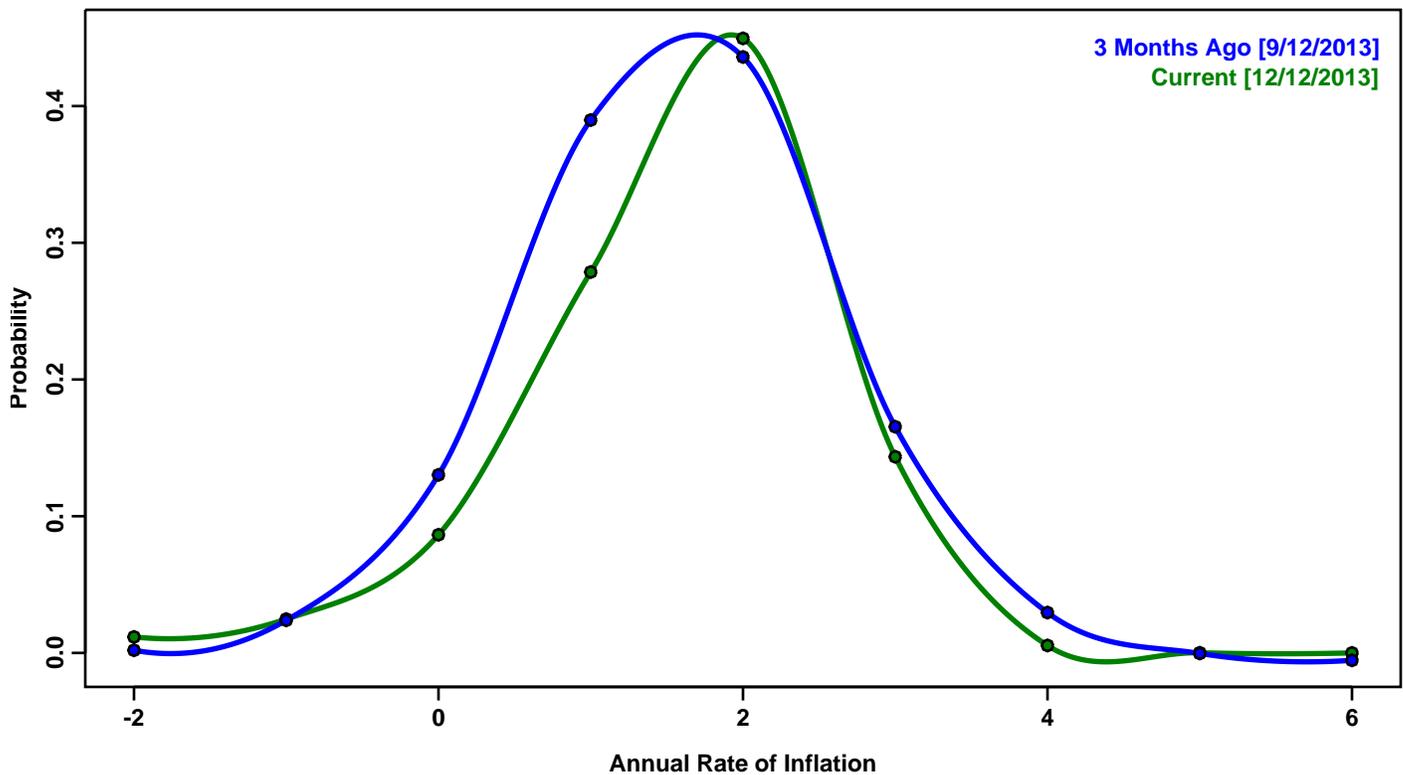
RISK NEUTRAL PROBABILITY DENSITY FUNCTIONS -- Inflation Caps & Floors

Probabilty of Deflation and High Inflation over the next 5 Years